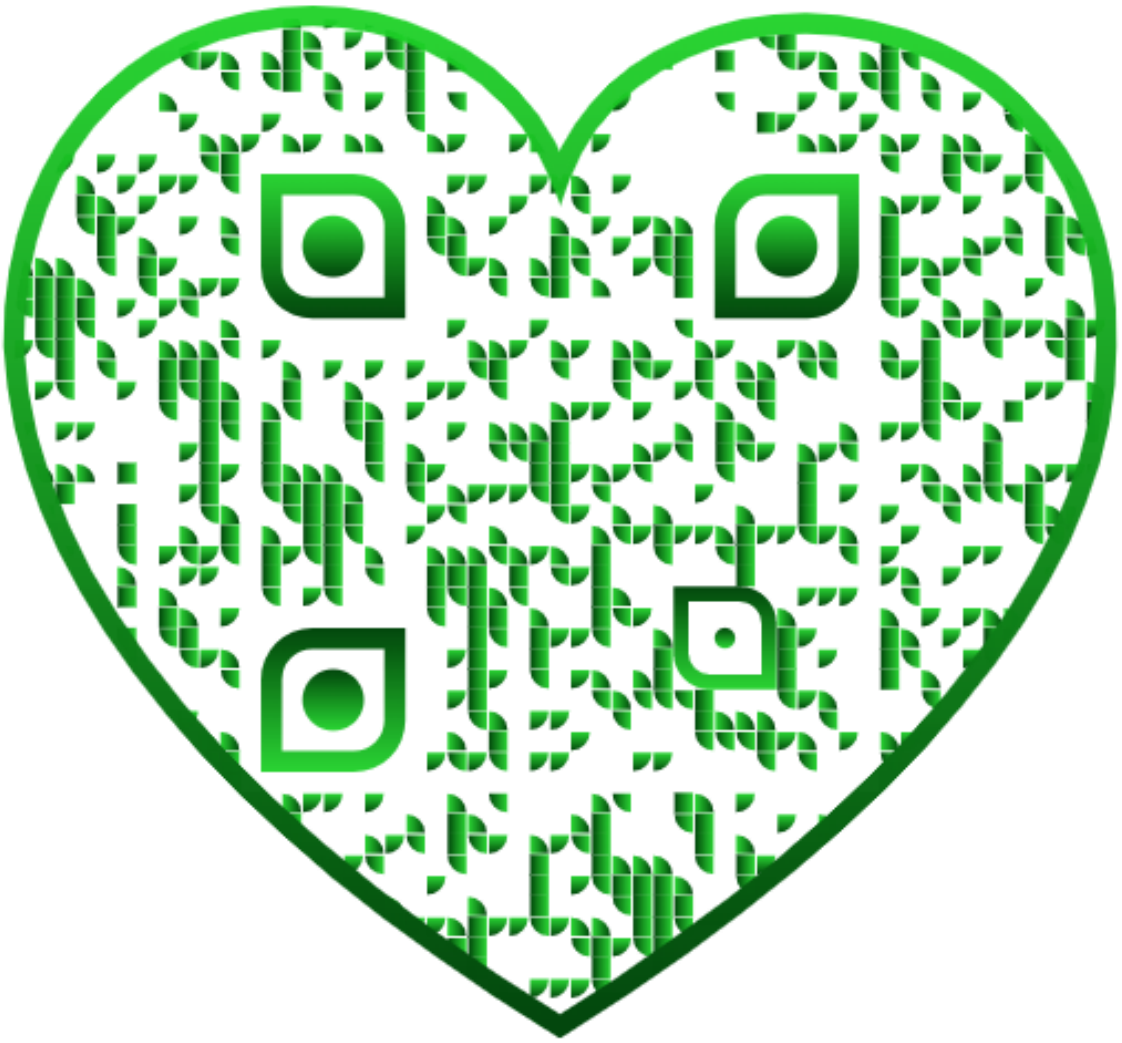
COLIN A. ROSS, M.D.

HUMAN ENERGY FIELDS



HUMAN ENERGY FIELDS

A New Science and Medicine

Colin A. Ross, M.D.

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INTRODUCTION: WHAT WILL YOU FIND IN THIS BOOK?

In Human Energy Fields, I describe a new science and medicine. I provide general principles, theory and a range of applications for this new field. My goal is to create a conceptual framework that brings human energy fields into mainstream science. To do this, I have had to think about the mind-body problem and the philosophy of science. In order to bring together modern physics and engineering, on the one hand, and ancient knowledge of chakras, chi meridians, auras and the human spirit on the other, I have had to refute Cartesian dualism, and the logical foundation of western materialism.

I propose that spirit is a general property of matter. I propose that the human spirit and the electromagnetic field of the human body are the same thing. They have been artificially separated by mistaken dualism. Studying the human aura or the health of the heart chakra is no more mystical than taking an EKG or an EEG – in fact, it is the

same thing. Wherever there is space, time, energy, or matter, there is an electromagnetic field, and this field is “the life force.”

The life force, mind, soul, spirit, consciousness – these things exist in the universe, and they are part of physics. Therefore a physics of the human spirit is possible. From this physics can be derived a wide range of electrical engineering applications. The standard EKG and EEG taken within western medicine only scratch the surface of the science of human energy fields. There are numerous potential applications within medicine, anthropology, agriculture, entertainment, weapons development, security systems and other areas.

Medicine, I believe, is just about to go wireless. Medicine has been lagging behind telecommunications in this regard. If I am correct, twenty years from now, medical students will think that taking EEG’s or EKG’s using contact electrodes is antiquated. They will think that hand-held devices for reading the body’s electromagnetic field are part of routine, mainstream clinical practice - the futuristic medicine of Star Trek is not far away.

In Human Energy Fields, I describe three inventions for which I have made patent applications in some detail: the Human Eyebeam Detection System, the Whole Body EM Scanner, and the Chakra EEG System. These three devices illustrate the logic, utility and potential of the science of human energy fields. I have been working on the logic and principles of this new science for forty years. It has taken that long for me to study my own states of consciousness, anthropology, philosophy, physics and medicine, and to unify these sources of art and science into a truly scientific theory. The theory leads to a large number of testable predictions and applications.

What Will You Find In This Book?

Human Energy Fields is different from the books dealing with mind, physics, energy fields, energy medicine and consciousness listed in the Appendix. These differences are:

1. It describes a hard science and medicine with applications, testable hypotheses, and instrumentation.

2. It exposes the core logical flaw in materialism, dualism and reductionism in simple, clear logic.
3. It provides a crucial experimental test of the theory of human energy fields.
4. It unifies eastern and western medicine in concrete, practical reality, not just in theory. The core proposition of the science is: the human energy field, called chi, the human aura, the life force, or the human spirit in different philosophical systems, and the electromagnetic field of the body are the same thing.
5. It outlines practical applications of the theory in many different fields including anthropology, medicine, agriculture, weapons development, security systems, physiology, and psychotherapy.
6. It describes three specific devices that can be used in the study of human energy fields.
7. It proves scientifically that, in one specific instance, western science is wrong about what is “scientific” and what is “paranormal” (contrary to western science, the human eyebeam is real). From this, it follows that

western science could well be wrong in other ways.

The science of human energy fields unifies the subjective and the objective. The objectively real EKG and the subjective energy of the heart chakra are the same thing: these are different languages for the same reality, not different realities. This does not mean that all subjective claims about human energy fields are automatically accurate or scientifically real: some are, and some are not. The science of human energy fields provides theory, instrumentation and methodology for scientific study of many experiences previously categorized as mystical, religious, magical, primitive, superstitious or paranormal by mainstream physical and social science.

I do not provide academic references for every statement I make in this book; the background information on physics, biology and the history and philosophy of science is contained in the books in the bibliography, most of which are readily accessible.

Colin A. Ross, M.D.

PHILOSOPHICAL FOUNDATIONS

I have been working on the science of human energy fields for forty years. In order to get to the material presented in the third section of this book, beginning with Chapter 6 , I had to do a lot of reading. This included books about physics, the philosophy of science, human consciousness, anthropology, western medicine and eastern philosophies. In order to make the predictions, and outline the experiments described in Human Energy Fields, I had to correct a core logical error in western materialism. This section of Human Energy Fields walks the reader through the first six steps I took in developing the new science:

1. Direct conscious experience of the energy fields
2. Not dismissing this experience as invalid
3. Regarding the experiences as scientifically verifiable
4. Studying the problem carefully through reading and thinking

5. Refuting Cartesian dualism
6. Proposing that spirit is a general property of matter
7. Designing the experiments, instruments and predictions of the science

Without these seven steps, the science of human energy fields would not have been developed. However, in order to understand the science itself and to work on developing the instruments and applications described in Human Energy Fields, it isn't necessary to agree with the philosophy. From the perspective of experiments, instrumentation and applications, the importance of the philosophy is not that it is correct, or that one must agree with it – the thinking in the first three chapters permitted the science of human energy fields to be developed.

The philosophy of materialism dominates and underlies western science and medicine. Western science prohibits certain experiments from being conducted, and certain phenomena from being investigated, for instance, experiments to detect and characterize the human eyebeam, which is not allowed to exist by western science.

A lot depends on the vocabulary one uses. For instance, if I claim that I can send an energy beam out through my eyes to make a tone sound out of a speaker, this is a claim of “the paranormal.” If I tried to study the human eyebeam at a university, using this vocabulary, I would not be taken seriously. However, if I say instead that the electromagnetic field of the brain is emitted through the orbit (the opening in the skull where the eyes are), can be captured by EEG electrodes and used to trigger a neurofeedback reward tone using neurofeedack software and hardware, this is now a scientific hypothesis, rather than a claim of the paranormal.

I propose that “the life force” and the electromagnetic field of the body are the same thing. In order to study the life force, chi or the human aura, one must measure the electromagnetic field generated by every atom, molecule, cell, tissue and organ in the human body – and by the human body as a whole. This leads to a unification of eastern and western medicine, and makes possible the scientific study of a wide range of experiences, healing methods and folk beliefs that are viewed as

paranormal, mystical, superstitious or primitive by western science and materialism.

1
SPIRIT IS A GENERAL PROPERTY OF MATTER

In order to create the science of human energy fields, I had to do cognitive therapy for myself at a philosophical level. I had to correct core cognitive errors in myself, errors I inherited as a member of western civilization. I followed the injunction, "Physician, heal thyself," at the philosophical level. Similarly to how I proceed in cognitive therapy with individual trauma survivors, I had to think about the dissociation of mind and body, and matter and spirit, within western civilization, and I had to refute Cartesian dualism and reductionism. Only by doing so could I create a science that unifies Eastern and Western medicine.

In order to provide secure philosophical foundations for the new science, I had to devise a refutation of Cartesian dualism and reductionism. The science requires a different philosophical base. What follows is my attempt to provide that:

THE BASIC PHILOSOPHY OF WESTERN SCIENCE

Reductionism is the philosophical foundation of western science, medicine and technology. According to reductionism, the universe is a complicated machine – spirit is an unnecessary postulate that cannot be studied with scientific method. Cartesian dualism is the historical precursor of reductionism. Spirit was dissociated from the physical by Descartes, but he treated it as an honored element that lies outside science; subsequent to Descartes, spirit was discarded altogether, leaving a mechanical universe without any soul or spirit – the universe of reductionist western science.

If I reject Cartesian dualism and reductionism, I believe, and adopt instead a philosophy of unity, I can avoid a core, fatal contradiction within the logic system of dualism, materialism and reductionism. Once recognized, this core logical flaw renders reductionism untenable as a philosophical perspective. This in turn opens up the

possibility of a new and different science with a different foundation.

Reductionism is a corollary of dualism, therefore it evaporates when dualism is rejected. Reductionism, positivisim, atheisim, and materialism – variants of the same philosophy - deny the existence of God or spirit, but simultaneously make claims that depend on dualism and the existence of an extra-scientific spirit, soul or God. Reductionism is wrong because it is logically inconsistent, self-contradictory and untenable. It is also, in my opinion, scientifically mistaken.

CARTESIAN DUALISM LEADS TO REDUCTIONISM

Rene Descartes published his Discourse on Method in 1637, five years before the birth of Sir Isaac Newton. In it he defines the philosophical foundation of western science, medicine and technology. According to Descartes, the universe was created by God, but after creation He stepped back and allowed the universe to evolve and

function on its own. In order to pay lip service to religion, however, Descartes stipulated that God keeps the universe running by lending it His "preserving action." This preserving action is an unnecessary postulate from a materialist perspective, and so has been defined as unscientific and dropped by western science:

> However, I did not wish to infer from all these things that this world had been created in the way I described for it is very much more likely that, from the beginning, God made it as it was to be. But it is certain, and this is an opinion commonly held among the theologians, that the action by which he conserves it now is the same as that by which he created it; so that even though he did not at the beginning give it any other form than that of chaos, provided that he had established the laws of nature and lent it his preserving action to allow it to act as it does customarily, one can believe, without discrediting the miracle of creation, that in this way alone, all things which are purely material could in time have made themselves such as we see them today; and their nature is much easier to grasp when one sees them being fully made from the start. (p. 64)

Not only is the universe an automatic machine, according to Descartes, but so is everything in it including the human body. The bodies of animals are pure machines, whereas the human body is infused with a rational soul that gives rise to thought, consciousness and Descartes' motto, "I

think, therefore I am." The rational soul is to the human body as God is to the universe: both are the soul in the machine. The soul is an unnecessary postulate from a reductionist perspective, however, and it has been defined as unscientific and discarded by western science:

> This will not appear in any way strange to those who, knowing how many different automata or moving machines the industry of man can devise, using only a very few pieces, by comparison with the great multitude of bones, muscles, nerves, arteries, veins and all the other parts which are in the body of every animal, will consider this body as a machine, which, having been made by the hands of God, is incomparably better ordered and has in it more admirable movements than any of those which can be invented by men. (p. 73)

Descartes' dualism requires a complete separation of spirit and matter. Spirit (God and the human soul) exist in a separate sphere or dimension from matter and physical energy. Despite the lip service he pays to God, the soul and religion, however, the human mind is an epiphenomenon of the body, according to Descartes. All the diseases of the body and the mind will eventually be understood and treated by treating biological disease states of the body. In Descartes' medicine of the far future, which is with us today, a complete understanding

of the body will eradicate disease and prolong human life. Medicine was not very developed in Descartes' time, but we are closer to the complete explanation of disease now than we were in 1637. Continued scientific progress will eventually result in all disease being cured, once all the mechanisms are understood, according to Descartes:

> … instead of the speculative philosophy taught in the Schools, a practical philosophy can be found by which, knowing the power and effects of fire, water, air, the stars, the heavens and all the other bodies which surround us, as distinctly as we know the various trades of our craftsmen, we might put them in the same way to all the uses for which they are appropriate, and thereby make ourselves, as it were, masters and possessors of nature. Which aim is not only to be desired for the invention of an infinity of devices by which we might enjoy, without any effort, the fruits of the earth and all its commodities, but also principally for the preservation of health, which is undoubtedly the first good, and the foundation of all the other goods of this life; for the mind depends so much on the temperament and on the disposition of the organs of the body, that if it is possible to find some means of rendering men as a whole wiser and more dexterous than they have been hitherto, I believe it must be sought in medicine. It is true that the medicine practiced now contains little of notable use; but without intending to do it any dishonour, I am sure there is no one, even among those who practice it, who does not admit that what is known of it is almost nothing compared to what remains to be known, and that we could free ourselves of an infinity of illnesses, both of the body and of the mind, and even

> perhaps also of the decline of age, if we knew enough about their causes and about all remedies with which nature provided us. (p. 78)

Within Descartes' "practical philosophy," causality for serious mental illness is allowed to run in only one direction: from brain to mind. "Mind" is really an unnecessary postulate from the point of view of Cartesian medicine: "mind" is shorthand for brain output within the reductionist world view. The mind can be reduced to the brain; God, the soul and spirit have evaporated from the western scientific universe.

The core logical flaw of western materialism is evident in Descartes' statement that a complete knowledge of all biological mechanisms will eventually lead to remedies for "an infinity of illnesses, both of the body and of the mind." Healing illnesses of the mind by repairing the body is possible only if there is an interaction between body and mind, but Descartes disallowed any interaction between these two dissociated spheres. His philosophy thereby contradicts itself at its core.

The reductionist solution to this contradiction is to reduce mind to an epiphenomenon; “mind” becomes an out-dated way of talking about brain function. The core logical contradiction within western science is a disavowed and surreptitious reintroduction of spirit in a number of different ways, which I will describe below. Western science claims to have dismissed and disallowed the existence of spirit, but in fact reintroduces it in disguised vocabulary.

AN UNRESOLVED PROBLEM IN PHYSICS: THE NATURE OF SPIRIT

Modern science proceeds as if it has shorn itself of religion and superstition and therefore does not have to consider God, soul or spirit. However, all modern science has done is prohibit serious consideration of an unsolved problem. Scientists have declared that the problem of the nature of the spirit lies outside science, however, the problem of the spirit persists, despite the fact that western scientists have prohibited any mention of it within science. I propose that the nature of spirit is a

problem in physics: physics is the study of how the universe works, and spirit is part of the universe.

THE CORE LOGICAL FLAW IN REDUCTIONISM

In the history of western civilization, reductionism was present in the philosophy of the Greek atomists. It became the ruling philosophical position of academia, and of science, after the Middle Ages. Reductionism – a.k.a., materialism, positivism, atheism – is in the process of dying and will be regarded as an amusing historical curiosity at some point in the future. One reason for the impending death of materialism is the core logical flaw in its foundation. This flaw is evident in the distinction between animate and inanimate matter.

According to materialism, the universe contains no soul, God or spirit. It consists only of physical forces and objects interacting blindly according to the laws of physics, without any higher purpose, meaning or direction. This includes human beings, who are merely biological machines blown hither

and yon by their genetics and the environment. Evolution occurs automatically due to natural selection and the survival of the fittest. The materialist universe is an empty machine – a complicated machine, but nevertheless merely a machine. All matter boils down to atoms, then to the fundamental forces that make up atoms.

Reductionism is the doctrine that says everything can be reduced, or boiled down, to the fundamental forces of physics: biology reduces to chemistry and chemistry reduces to physics. Reductionism, materialism and atheism are different aspects of the same core philosophy.

The Structure Of The Core Logical Flaw In Materialism And Reductionism

The structure of the core logical flaw in western materialism is illustrated by the following proposition:

There is only one country in the world: I am going to a foreign country on vacation.

Both terms in this proposition cannot be true at the same time. If there is only one country in the world, then it is not possible to go to a foreign country on vacation. Alternatively, if one is going to a foreign country on vacation, then it is not possible that there is only one country in the world.

The proposition can be adhered to only if the logical contradiction is ignored. Once it is pointed out, and acknowledged, then the person must stop stating the original proposition, and substitute one of two logically consistent propositions:

There are many countries in the world; I am going to a foreign country on vacation.

There is only one country in the world; I am not going out of the country on vacation.

Western materialists make the same logical error as the proponent of the first proposition above, as I will illustrate below.

The Distinction Between Animate And Inanimate Matter

It is an accepted fact in modern science that matter can be either animate or inanimate. I was taught in medical school that only biological organisms are alive: rocks are clearly inanimate; viruses could be considered to be transitional or intermediate, but are really inanimate because they do not carry out biological processes like cellular respiration. Amoeba are alive, so mind is irrelevant to the distinction between animate and inanimate matter.

This distinction between animate and inanimate matter illustrates the pervasive but unrecognized persistence of Cartesian dualism in reductionist science. If there is no soul, spirit, élan vital or God, if mind is an epiphenomenon of brain, and if biology can be reduced to chemistry, and chemistry to physics, then what is the scientific difference between animate and inanimate matter? Are the laws of physics different in amoeba, or human liver cells, than they are in rocks?

From a reductionist, mechanistic perspective, everything can be reduced to physics. For the Greek atomist, this meant atoms, while in quantum mechanics it means quarks, but the philosophy is

the same: the universe is a machine without soul. If there is nothing besides energy and matter, however, and if matter is just a configuration of energy ($E = mc^2$), then there cannot be any fundamental scientific difference between animate and inanimate matter.

The distinction between animate and inanimate matter, from a reductionist perspective, must be an anachronism, devoid of real meaning. It is an illusion, habit of speech, or superstition. Everything must be dead if there is no soul or spirit in the universe. What, then, is the difference between an alive person and a dead person? Mainstream physics, in its modern form, is committed to the view that there is nothing to account for outside the domain of physics: no God, no soul, and no spirit. Therefore an alive entity cannot differ fundamentally from a dead one.

Reductionism faces an insurmountable hurdle. No sensible person is going to agree that, scientifically, we are all dead. The reductionist tries to have it both ways: there is no God or spirit; some things are animate and some are not; and everything

reduces to the same laws and functions of physics. This is equivalent to a shell game or card trick. If the reductionist moves the cards quickly enough, no one will notice that élan vital has been thrown out of the deck but then surreptitiously brought back in as the distinction between animate and inanimate matter.

Some matter can be animate, while other matter is inanimate, only if the living matter possesses a property absent in the inanimate matter. There cannot be a fundamental difference between animate and inanimate matter unless there is a “life force” that lies outside the laws of modern physics. Modern science disallows the existence of an extra-scientific life force but maintains the distinction between animate and inanimate matter. This is the fatal contradiction within the logic system of materialism.

The Content Of The Core Logical Flaw In Materialism

Materialism does not make statements about going to foreign countries on vacation. Instead, it makes

statements about the nature of the universe:

No “life force” is allowed because everything reduces to inanimate physical forces: some things are alive and some things are dead.

This core logical flaw is ignored or fudged over by materialist western science. Materialists – biologists, physiologists, physicists, geneticists - talk about “the origins of life” and state that they occurred in the primeval ocean about one billion years ago when inorganic compounds bonded together to form organic compounds, which then self-organized randomly by the laws of physics and chemistry to form the first living organism. Prior to this, there was no life on earth, they say.

The distinction between animate and inanimate matter, and the idea that there was an “origin of life” on earth about one billion years ago are variations of the same core logical error. Both errors of logic are endorsed by virtually all biologists, physicists, biochemists and other modern scientists.

It is logically impossible for some things to be alive if everything reduces to the laws of inanimate particles and no God, soul, spirit, “life force,” élan vital, chi energy or other extra-scientific force is allowed. Logically, only one of two propositions can be true if everything reduces to the four fundamental forces of physics (the strong and weak nuclear forces, gravity, and electromagnetic fields):

We are all dead and unconscious.
Everything is alive.

In terms of the origin of life, the two logically consistent statements are:

Everything is dead.
The origin of life was at the origin of the universe.

Since it is absurd to claim that we are all dead and unconscious, the only logical alternative is animism. Clearly, we aren’t all dead, so the materialist position is self-contradictory. If everything is alive, however, then “alive” cannot

refer to any biological process. Rather, all energy, all matter, and even space and time, must be alive. Alive, then, means “existing.” Animism is conceptually consistent; it differs from materialism in that it allows the existence of spirit. According to animism, spirit is a general property of matter (and of energy, space and time), rather than a separate principle existing in a second dualistic sphere or dimension outside the material world.

There are only two logical possibilities, if we assume that no fundamental forces exist other than those known to physics: there is no soul, spirit or God (materialism); or, spirit is a general property of matter (animism). Neither of these logical possibilities allows a fundamental distinction between animate and inanimate matter. The only way to maintain the distinction between animate and inanimate matter, while advocating a materialist world view, is surreptitiously to reintroduce élan vital into the universe, that is, to reintroduce dualism.

Elan vital is reintroduced into the logic system in all analyses that invoke emergent properties of

complex systems to explain mind, consciousness, soul, or spirit. The terms spirit, élan vital and emergent property differ only semantically. According to the emergent property solution to the mind-body problem, mind is an emergent property of the electrical-biochemical processes in the human cerebral cortex. Exactly what "emergent property" means and how it works is never stated because no one knows anything about it – "emergent property" is just a technical-sounding version of Descartes' rational soul

How am I using the word animism? I mean simply that everything has the property of spirit. I am not endorsing fatalism, pantheism or polytheism, nor am I endorsing or opposing monotheism. The existence of a personal God is neither proved nor disproved, neither opposed nor endorsed by the science of human energy fields. In monotheism, it appears to me, God is everywhere, and He is alive, sentient and spiritual. I am saying the same thing, but I am leaving out the personal nature of God. I am not rejecting it, just leaving it out of the science. I am defining a branch of science and

medicine, one that requires a philosophy of unity rather than of dualism.

The science of human energy fields is neutral on the existence of a personal God who makes moral judgments. A personal God, one might say, is an add-on to animism in the sense I am using the term. Animism, in my sense, is indistinguishable from monotheism, if we subtract the personal nature of God from monotheism. Similarly, atheism is indistinguishable from animism, in my view, if we subtract the existence of spirit from animism. The only thing I am rejecting is dualism, and the only thing I am endorsing is unity. The science of human energy fields is, I believe, consistent with all major religions, except that it doesn't require the personal nature of God: belief in the personal nature of God isn't required for a doctor to order an EEG or EKG, nor is it required to study human energy fields scientifically.

Watson and Crick Claimed To Have Discovered "The Secret of Life"

On February 28, 1953 Francis Crick walked into the Eagle pub in Cambridge, England and announced that he and James Watson had found “the secret of life.” Crick’s claim is logically impossible. Watson and Crick had discovered the structure of DNA, and they certainly deserved a Nobel Prize, but it is logically impossible that they had discovered “the secret of life.” Their claim provides another example of the surreptitious reintroduction of dualism in the form of the animate-inanimate matter distinction.

Watson and Crick cannot have discovered the secret of life because they had not demonstrated any scientific difference between animate and inanimate DNA. Inanimate DNA exists all over the planet, as does animate DNA. What property, principle or quality does animate DNA possess that it loses when it dies?

A car mechanic could walk into the Eagle pub in Cambridge and exclaim that he had discovered the secret of life because he had discovered the internal combustion engine. This mechanic would not be taken seriously because, although the engine runs

the car, the car is not alive, according to the animate-inanimate distinction. Additionally, the physical machinery of an entity cannot confer life on it if we adhere to reductionism, because no “life force” is allowed. This is true for cars and amoeba, and for internal combustion engines and DNA. Additionally, it is perfectly possible, conceptually, for there to be biological organisms on other planets that do not have DNA, therefore having DNA cannot be necessary for life to be present.

The logical inconsistency of Francis Crick’s “secret of life” claim becomes apparent if we consider an iron supplement prescribed to a slightly anemic pregnant woman. No western scientist would say that the iron is alive when the pharmacist hands it to the woman. Nor is it alive as it goes down her esophagus. How about while it is being absorbed through her gastrointestinal tract into her bloodstream? Clearly the iron is not alive yet, because some of it gets excreted before it is incorporated into hemoglobin. Perhaps the iron becomes alive at the moment it is incorporated into a hemoglobin molecule.

But what has changed about the iron atom(s) the woman has swallowed? Has it gained or lost neutrons or protons? Has it suddenly acquired a form of energy unknown to physics? From a quantum mechanical perspective, all that has happened to the iron atom is a reversible reconfiguration of its electron field (this is true of all life processes and biochemical reactions). When the red blood cell in which the hemoglobin molecule is contained dies, the iron atom is dead again, according to the animate-inanimate matter distinction.

That is the fatal internal self-contradiction within dualism and reductionism: according to reductionism, iron atoms cannot become “alive,” then “die,” then be reborn again if incorporated into another iron prescription for another pregnant woman. If an iron atom cannot die then be reborn, then neither can a molecule of which the iron atom is a part, and neither can any organism of which that molecule is a part. To be consistent and tenable, reductionism must be symmetrical: no property (the “life force”) can disappear as we move downward from biological organism to

molecule to atom, and none can emerge as we move upward. The human brain cannot possess any properties not inherent in atoms, because it is simply a large collection of atoms.

From a reductionist perspective, human beings, amoeba, DNA molecules, and all matter, are just configurations of atoms – there is nothing else. The secret of life cannot be discovered by discovering the structure of DNA, anymore than it can be discovered by discovering the structure of an iron atom or a nail. Crick's claim to have discovered the secret of life is impossible within a materialist world view that rejects mind, soul, spirit, élan vital and God.

The Myth Of "The Origins Of Life" Revisited

According to western materialist science, "the origins of life" occurred on earth about one billion years ago: prior to that there was no life on the planet. This is logically impossible. If there is no "life force," then there can be no "origin of life." All that happened, one day one billion years ago, is

some new chemistry, but chemicals cannot be dead then become “alive,” any more than iron atoms can. The origin of life on the planet poses the same logical problem as the “birth,” death and reincarnation of an iron atom swallowed by an anemic pregnant woman. According to western reductionist science, atoms first came to life in the ocean one billion years ago; this is a variation on the idea that “mind” first emerged from the human cerebral cortex, perhaps a few hundred thousand years ago (the date for the first emergence of mind is not clearly set by western science). The emergence of life and the emergence of mind are both logically impossible within a reductionist world view.

Another version of the core logical flaw of western materialism, then, is:

No extra-scientific “life force” is allowed: the origin of life occurred on earth about one billion years ago.

Once this logical contradiction is pointed out and acknowledged, then materialist scientists must stop

talking about “the origins of life” and must stop saying that some things are alive and some things are dead. They must, instead, endorse one of two logically consistent propositions:

Nothing is alive.
The origin of life was at the origin of the universe.

The second proposition does not solve the problem of how something emerged from nothing at the big bang, but at least it is logically consistent concerning our universe. If the origins of life were at the big bang, then we have animism and spirit is a general property of matter (God is everywhere). If nothing is alive, then we have materialism. For those who do not believe in the big bang theory, the more general term the origin of the universe can be substituted for the big bang.

The Mind Cannot Be Reduced to the Brain Because Biology Can Be Reduced to Physics

In reductionist medicine and psychiatry, the mind can be reduced to the brain. The mind cannot in fact be explained by the biology of the brain, however, because the biology of the brain can be reduced to chemistry and chemistry can be reduced to physics. If one atom has no mind, then two atoms have no mind because of the equation $(2 \times 0 = 0)$. You can increase the first term in this equation to $10^{1,000,000,000,000,000,000,000}$ and the result of the mathematical operation will still be zero.

The only way the brain can have a mind is if every single atom comprising the brain has a tiny mind. Otherwise, mind must be an emergent property that does not exist in atoms, and that cannot be accounted for in terms of gravity, electromagnetism, the strong nuclear force, or the weak nuclear force: "mind" must be a fifth form of energy that lies outside known physics. That conclusion, however, is forbidden by reductionist science.

The Nobel Laureate in Medicine, Gerald Edelman and his coauthor, Guilio Tononi, in developing a

neural model of the origins of consciousness (Edelman and Tononi, 2000), state that, “Whatever the specialness of the human brain, there is no need to invoke spiritual forces to account for its functions. Darwinian principles of variation in populations and natural selection are sufficient, and the elements invoked by spiritualism are not required for our being conscious” (p. 81).

This is a statement of the materialist position, according to which no force unknown to physics is allowed. However, Edelman and Tononi simultaneously argue that consciousness is an emergent property of the brain’s electro-bio-chemical organization. This is a dualist position requiring a force or energy not accounted for by modern physics, and not associated with any matter in the universe except the human brain. Edelman and Tononi, then, have simply reasserted the existence of Descartes’ rational soul, in different vocabulary. They are simultaneously dualists and reductionists, as is Francis Crick, but this is a logically untenable position.

Edelman and Tononi use the term “emergent property” – this term sounds technical and scientific but it is no different, conceptually, from “emergent force,” which in turn is no different, conceptually, from Descartes’ “rational soul.” An “emergent force” would be a fifth force not allowed by materialism, however, so the surreptitious introduction of a fifth force must be disguised by calling it an emergent “property” instead of an emergent “force.” Edelman and Tononi state that they are not invoking “spiritual forces,” but in fact they are, using different vocabulary.

In western science and medicine, psychiatrists study the mind, but the mind (the psyche), from a materialist perspective, does not actually exist. The mind allowed by reductionist science is really just shorthand for “brain output.” Descartes’ “rational soul” is not allowed. There is no rational soul, no mind, and no emergent property that cannot be reduced to basic physics.

Within materialism, there is no mechanism by which “consciousness” can “emerge” from the human cerebral cortex, any more than it can

emerge from an iron atom. The word “emerge” tells us nothing scientifically. There is no mechanism for “emergence” and no way to test or demonstrate it scientifically. “Emergent property” is like the ether of nineteenth century physics: it is just a word, not an actual thing existing in the universe. An earlier such word discarded by western science is phlogiston - phlogiston was a postulated substance thought to be involved in combustion in the eighteenth century. Phlogiston was eventually dropped from science because it couldn’t be demonstrated and didn’t explain anything – it became an unnecessary postulate.

According to reductionism, the term “psychiatry” will eventually have to be dropped also, because there really is no “psyche,” only the brain and its biological functions. Eventually, the biology of the brain will be reduced to chemistry, then to quantum chemistry, then to quantum physics. In the interim, we continue to refer to “the mind” and “mental health” because of habit and convention. Reducing the mind to the brain disallows any distinction between matter and spirit, and leads to

only two logical possibilities: we do not have minds, or, mind is a general property of matter.

There is no “life” in an iron atom separate from the strong and weak nuclear forces, gravity and electromagnetism. Likewise, there is no “mind” to find in materialist biology. Modern biology can never explain the mind because it disallows the existence of mind. If mind, or spirit, exists, however, it must be a general property of matter operating at the quantum mechanical level. This is so because biology reduces to chemistry, chemistry to physics, and physics to quantum mechanics.

The Four Fundamental Forces Recognized To Date in Physics

Modern physics recognizes four fundamental forces: gravity, electromagnetism, the strong nuclear force, and the weak nuclear force. If we reduce the mind to the brain, the brain to chemistry, and chemistry to quantum mechanics, which of these four forces is the most likely to be the human spirit? The human spirit cannot reside in the gravitational field generated by a human body, because that field is

too weak. Nor can the spirit exist only inside the nucleus. The only candidate left is electromagnetic energy.

What do we measure when we measure the operation of the human mind scientifically? The electroencephalogram (EEG). What do we require in order to conclude that a person's mind is dead? A flat EEG. We know that the brain generates an electromagnetic field. So does the heart and, for that matter, the kidney, the big toe and every iron atom in every hemoglobin molecule in every red blood cell.

If we are to study the mind scientifically, the only candidate for "the mind" is the electromagnetic field of the body. However, mind, or spirit, must then be a general property of matter because all matter generates an electromagnetic field: mind cannot be associated only with the human brain because the laws of physics are the same in the brain and in iron atoms. At the quantum mechanical level, there is no fundamental difference between animate and inanimate matter, nor between matter, energy, space and time. This is

also true at the cosmological level, according to relativity theory, because the structure of space and time are inseparable from the presence of matter and energy.

The Nature of Spirit Is a Problem in Physics

Either spirit is a meaningless term or it is a problem in physics. If everything reduces to physics, no other option is possible. That is why spirit must be a general property of matter. We cannot have a complete scientific explanation of the universe until we have a complete explanation of the spirit. I decline to differentiate mind, soul, spirit and consciousness because I see them as different terms, with different connotations, for the same thing. Reductionists have simply declared that consciousness is not a problem in physics. It is self-evident that there is mind and consciousness in the universe. These things exist. Their nature and properties cannot lie outside physics and they cannot be “supernatural,” “ineffable” or any more unknowable than the operations of flashlights and car engines.

You cannot have it both ways and be logically consistent; reductionists declare that there is no God, soul, or spirit. It is all very well to declare that God is dead, but the death of God does not solve the problem in physics: what is the physical nature of mind? It is obvious that we have minds, subjective consciousness and awareness. Solving the problem by declaring that the problem doesn't exist is unscientific.

The Electromagnetic Field of the Human Body Is The Human Spirit

I propose that spirit is a general property of matter. When we measure the electromagnetic field of the human body, we are measuring the human spirit. When we measure the electromagnetic field of a rock, we are measuring the spirit of that rock. That's what spirit is. I am confident that rocks do not have opinions on U.S. foreign policy. That is because the configuration of matter/energy associated with the spirit of a rock is much simpler than that associated with the human brain.

The existence of God, then, is not only a cosmological problem. It is also a local problem at the level of common experience. There is a spirit, and it is everywhere. That is where the science of human energy fields exists, in the middle world between the very small (quantum mechanics) and the very big (relativity theory). Certainly, the fundamental properties of the human electromagnetic field must be understood with quantum mechanics, but I am focused on the macroscopic level, the biosphere, and conscious human experience. I am interested in measuring the human energy field at the same level as we currently do with EKG and EEG machines, only in a more subtle and conceptually integrated fashion, as described in this book.

Cartesian dualism cannot survive because it is based on a logical error. If we reject that error and start with an assumption of unity, then there is no possibility of reductionism because there is nothing to reduce. If spirit is a general property of matter, then God is everywhere. Wherever there is time, space, matter or energy, there is spirit. Logically, I argue, the only way for this not to be true is if we

are all dead and unconscious. Materialism proposes exactly this, but the assertion is so preposterous that materialists are forced to reintroduce mind, spirit, and the life force in the form of the animate-inanimate distinction. They thereby introduce a fatal logical flaw into the foundation of their world view.

The science of human energy fields is based on a simple assumption: spirit is a general property of matter. Every atom possesses a rudimentary consciousness or spirit. The spirit of a rock or lake is more complex, more interactive, more noticeable, and more widely distributed than the spirit of an individual atom. This does not mean that rocks think human thoughts. Only humans have human consciousness. The consciousness of a rock is less complex, but not less real than that of a human being. Rocks “know” things but not the way we do (this theme is developed in my other books including Spirit Power Drawings, Songs For Two Children, Northern Canada and Literary and Anthropological Studies, but it lies outside the focus of the present book).

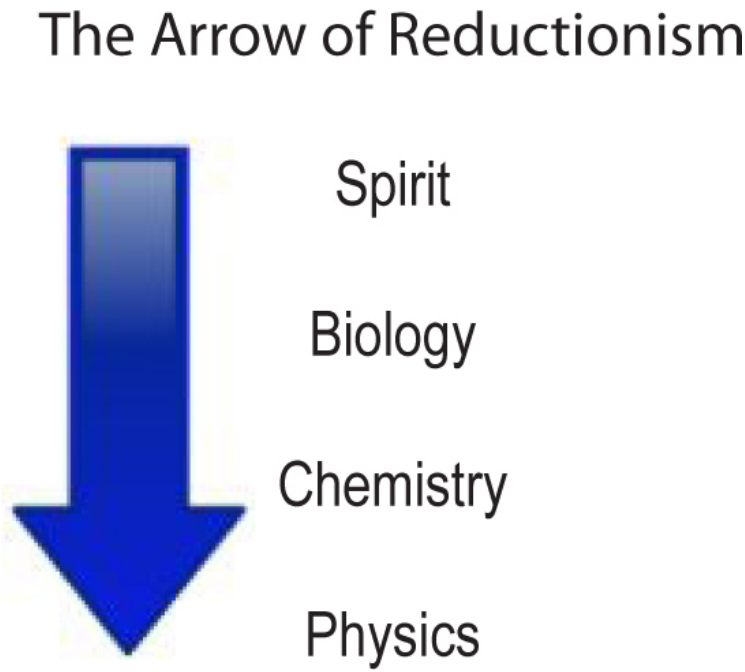
This has to be true if we reject Cartesian dualism. If dualism is disallowed, only one of two options is possible: we are all dead and unconscious, or spirit is a general property of matter. Western science endorses the first option, but it is so patently preposterous that it is simultaneously rejected even by materialists, who disguise their reintroduction of dualism by using technical-sounding vocabulary about emergent properties. If anyone really believed whole-heartedly in reductionism, they would have no grounds for objecting to rape, murder, child abuse, or genocide, since all of these would be merely the interactions of unconscious, dead, mechanical, meaningless atoms.

Even materialists only believe in materialism part of the time. Unfortunately, this part-time philosophy dominates and limits western science and medicine. That is why I have devoted time, space, matter and energy to refuting reductionism.

The Circle of Reductionism

The diagram underlying western science could be called the arrow of reductionism. According to

materialism, spirit doesn't exist. Mind may exist, but it is really just an epiphenomenon or habit of speech. The structure of the universe can be represented as follows: mind (spirit) reduces to biology; biology reduces to chemistry; chemistry reduces to physics; and physics is the basic level of the universe. The diagram of this philosophy is an arrow:

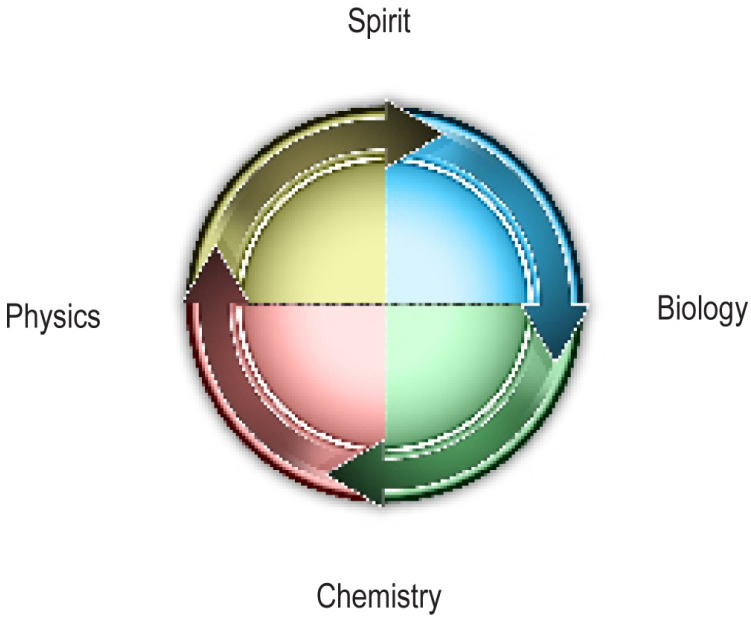


The diagram underlying the science of human energy fields is a circle. I use similar logic to think about the line of positive and negative integers: this

was depicted to me in high school as a line of infinite length with zero in the center, positive integers stretching away to infinity on the right, and negative integers stretching away to infinity on the left. But is this really the true geometry of integers?

Since positive integers and negative integers both stretch to infinity, they must meet there, I thought to myself in high school. Therefore, I thought, the line of integers must actually be a circle in a higher-order space (see the elaboration on this idea below). Similarly, according to this philosophy, spirit is a general property of matter, and therefore the arrow of reductionism is actually a circle. When you start with spirit and reduce it to biology then chemistry then physics, there is one more step: physics reduces to spirit. The diagram underlying the science of human energy fields has a different geometry from that of materialist science:

The Circle of Reductionism



The logic I am proposing is exactly the same as the geometry of the universe proposed by Einstein. In general systems terms, the geometry of the relationship between spirit and matter is isomorphic with the geometry of the physical universe. Isomorphism occurs when the same structure, logic, rules, geometry or principles can be observed at different levels of organization within a system. For instance the psychological rules within an individual might be the same as the legal and

sociological rules in his society, or, principles at work in an atom might be the same as organizational principles in a molecule or cell.

According to Newtonian physics, the universe extends infinitely far in all directions and is composed of Euclidean three-dimensional space. If you set off in a straight line, you can travel forever and never reach the edge of the universe. According to Einstein, however, if you travel in a straight line you will eventually return to your starting point: the universe is finite but unbounded and the straight line is actually curved in a higher-order space. A journey in the positive direction starts at zero, proceeds to mile +1, then mile +2, and so on … it ends with the traveler passing the markers at mile -2, then mile -1, and arriving back at zero again.

I am proposing that the same geometry governs the relationship between spirit and matter. If you start with spirit (or mind) and reduce it to biology, then chemistry, then physics, then to the most fundamental level of physics, you arrive back at spirit. Spirit can be reduced to matter and matter

can be reduced to spirit. The arrow of reductionism is a Newtonian-Euclidean form of logic that does not fit the real universe, according to the philosophy underlying the science of human energy fields.

There is no need to assume the existence of a “life force” or “subtle energy” that lies outside western science. There are just ever-more- subtle levels of the electromagnetic (EM) field. The field is increasingly complex and increasingly weak as we move to higher levels of consciousness: the magnetic field generated by the human brain is a billion times weaker than the earth main field, and it must be much more complex in its harmonics.

The electromagnetic signals used in cell phones are already so “subtle” that you can’t feel them or see them, and biologists debate whether they have any direct biological effect. Whether urban electromagnetic pollution has any direct effect on biology is not the important question, however. Within the science of human energy fields, the question is whether urban electromagnetic pollution has any direct spiritual effect. In later

chapters I will explain how this question can be answered within western science and medicine.

The cell phone is an excellent model for the physics of the human energy field. Some biologists claim that industrial electromagnetic fields cannot cause disease because they are too weak to have biological effects, and get lost in the water, heat and background noise of biological systems. If we reject dualism and reductionism, however, a measurable effect of electromagnetic fields on the human body is certain to exist, and is no more mystical than an EM signal making a cell phone ring. This effect occurs initially at the subtle levels of the human mind-body field that we call the spirit. The signals are transmitted to the biological level through a series of transductions, amplifications and trickle-down mechanisms. This is basically the same process as a phone signal going up to a satellite, coming back down to earth and eventually causing a human voice to come out of the phone's speaker.

Human beings are biological cell phones. We have evolved over a billion years in a sea of EM signals

that contain information relevant to survival. In later chapters I describe a wide range of research predictions, experiments and applications of the science of human energy fields in anthropology, religion, agriculture, psychiatry and public health; they all arise from this cell phone model of human energy fields. If a cell phone can transmit, receive and decode highly structured, very weak, digitized EM signals, then why can't the human nervous system? According to the science of human energy fields, the solar plexus is an EM communication device that transmits and receives meaningful information from the biosphere, the earth's EM field and the sun. This postulate is based on my personal, subjective experience of my own solar plexus.

We know that energy from the sun interacts with biology all the time: photosynthesis and the biosynthesis of vitamin D are two good examples. If sunlight can be captured by chlorophyll and transformed into biological energy and measurable plant growth, then, potentially, many other types of EM signal can be received and used by plants and animals. It is well established that a range of

different species use the earth's magnetic field for orientation and navigation, for instance. We live in an ocean of EM information and we have barely scratched the surface in our scientific study of the physics and biology of how this information is used by organisms.

2
QUANTUM MECHANICS AND HUMAN ENERGY FIELDS

Quantum mechanics is the branch of physics that studies how things work inside atoms. It deals with incredibly tiny distances and sizes, and is called quantum mechanics because it deals with quanta or particles. The way things work on the sub-atomic scale is very strange and defies the conventional logic of the larger-scale world in which we live as human beings.

The purpose of this chapter is to explain that quantum mechanics is relevant to the science of human energy fields, on the one hand, and not relevant on the other. How quantum mechanics is relevant is straight-forward. In this new science I focus on the electromagnetic fields generated by every atom, molecule, cell and organ in the body. Since the science is based on a philosophy of unity, this means that a fundamental understanding of body and mind, matter and spirit, requires quantum

mechanics. I propose that the human electromagnetic field and the human spirit are the same thing: clearly, then, the human spirit must be quantum mechanical in nature.

How is quantum mechanics not relevant to the new science? In my reading, various authors and commentators have tried to persuade me that quantum mechanics demonstrates an interaction between consciousness and matter. These arguments are not convincing to me, and appear to be based on dualism. The authors are trying to demonstrate how something outside modern physics – consciousness – interacts with matter. Consciousness can be outside physics only if it resides in a separate sphere or dimension from matter and energy, however.

If dualism is rejected, and if spirit is a general property of matter, then the interaction of consciousness with matter occurs within physics. Human perception is an event in the physical universe. Indeed, where else could it take place?

I am not trying to introduce a fifth force, principle or interaction – consciousness - into modern physics. At a practical level, quantum mechanics deals with "the problem of the conscious observer" by ignoring it, although the founders of quantum mechanics – Einstein, Bohr, Schrodinger and others – were deeply disturbed by the problem of the observer (see Appendix, The Two-Slit Experiment in Physics, for detail on the conscious observer). I plan to do the same, namely, not worry about the philosophical implications of quantum mechanics when doing experiments or inventing devices that make use of human energy fields. I think it's safe to say that no one on the planet fully understands quantum mechanics, its logic, or its philosophical implications, although many people are highly skilled at using the mathematical machinery of quantum mechanics.

To repeat, I am not trying to introduce a fifth force into physics, called mind, soul, spirit or consciousness. I propose that everything about human energy fields can be accounted for in terms of gravity, the strong and weak nuclear forces, and electromagnetic energy. If mainstream physics ever

discovers a fifth (or sixth, or tenth) force required for a complete model of the physical universe, then that force will be incorporated into the science of human energy fields. Until then, it is not required. What I am talking about is an EKG or EEG of the whole body, not a life force, chi energy, human aura or other energy field thought to lie outside physics.

I have constructed the science of human energy fields so that it is no more “philosophical” than a family doctor ordering an EKG or an EEG. The reason for clarifying my philosophy is not that human energy fields are more “philosophical” than any other branch of science. I enter the realm of philosophy in order to remove barriers to the new science erected by dualism. Dualism blocks studying human energy fields and the mind within a unified world view, set of experiments, and technology. Beyond that, the science of human energy fields does not require any philosophical interpretations of quantum mechanics in order to generate testable hypotheses, experiments, instrumentation, data or practical applications.

If spirit is a general property of matter, and if $E = mc^2$, then the interaction of consciousness with matter can be described by the laws, equations, mathematics, and logic of quantum mechanics. There is no "consciousness" above, beyond, behind, or separate from the electromagnetic field. A human observer doesn't add any new physics to the experimental apparatus, beyond that contributed by a photon detector, Geiger counter or any other measurement device.

Why quantum mechanics is not relevant to the science of human energy fields can best be understood by examining the two-slit experiment in physics. I will never understand quantum mechanics or relativity theory, because I can't follow the mathematics. However, I can follow philosophical interpretations of quantum mechanics, and I can identify errors of logic in those interpretations. My analysis of the two-slit experiment is in an Appendix so as not to interrupt the flow of this book, because many readers might not find it of interest, and – most importantly – because it could be mistaken. The theory of human energy fields does not depend on or require any

analysis of the philosophical implications of quantum mechanics.

A Caution For Commentators On the Philosophical Implications of Quantum Mechanics

I think that commentators should be cautious about using quantum mechanics to prove an interaction between consciousness and matter, the existence of consciousness or free will, or anything else of a philosophical nature. The science of human energy fields does not require any such philosophical arguments. Nor does it require my analysis of the two-slit experiment in the Appendix to be correct. The science is based on a philosophy of unity, and the proposition that spirit is a general property of matter. The purpose of the philosophy is to permit certain crucial experiments to be undertaken. Whether one likes the philosophy of unity or not, and whether one likes it being called animism or not, the science of energy fields arose through a sequence of events:

Table 2.1. The Sequence Of Events Resulting In the Science Of Human Energy Fields

1. Direct conscious experience of the energy fields
2. Not dismissing this experience as invalid
3. Regarding the experiences as scientifically verifiable
4. Studying the problem carefully through reading and thinking
5. Refuting Cartesian dualism
6. Proposing that spirit is a general property of matter
7. Designing the experiments, instruments and predictions of the science

Once these seven steps are carried out, then the philosophy can recede into the background and the process of designing experiments and instruments can begin.

3
THE SKEPTIC AND THE BELIEVER: THE TWO SIDES OF DUALISM

An internet search under human energy fields brings up skeptic and believer web sites among the first ten or twenty listed. Here we see the sociology of dualism. My goal is to be like Schrodinger's cat and to be in a state of superposition (see the Appendix, The Two-Slit Experiment in Physics): I am both a believer and a skeptic, but neither a believer nor a skeptic. I believe both sides and am skeptical about both. I belong to neither because I reject dualism.

The problem with the believer in human energy fields is that he, or she, is too often merely subjective. Subscribing to the believer's belief system is simply a matter of belief, not of evidence. I learned about this attitude within psychiatry. During my training, my supervisors believed in Freud, but they had no data to support their beliefs. Not only that, they were actively hostile to any

attempts or proposals to test Freudian theories, or psychoanalytic psychotherapy, empirically. It was more like a religion than a science. Doubt was defined as superficiality and a call for evidence was akin to heresy.

At present, there is no way to know, objectively and scientifically, whether a given energy healer - whether he is a reader of energy fields, a healer of disturbed chakras, or an adjuster of imbalanced chi meridians - is actually doing something, or simply deceiving himself and his client, unless we can measure the energy field involved. As long as the energy field is “spiritual,” in the dualist sense, it lies outside science and cannot be studied scientifically. Its practitioners rely on belief and subjective experience, not on scientific evidence. Such healers will never be part of evidence-based western medicine, because they are based on faith not evidence.

If clients of energy field practitioners experience subjective benefits, that tells me nothing. I saw what I thought were powerful effects of medication, during drug studies I conducted in Canada, but they

later turned out to be placebo effects. At the time of observing the dramatic reduction in symptoms, I assumed that the person must have been randomly assigned to an active medication. I did not even consider the possibility that the person could be on placebo, because the drop in symptoms was so large. But later, when the study was over and the double-blind was broken - when we found out who was on what - I learned that placebo is a very powerful thing. Therefore I am not convinced by any subjective effects of energy field therapies that anything is going on beyond the placebo effect.

The placebo effect is not small. Nor is it nothing: it is a very powerful effect about which we understand very little. For instance, when the world's antidepressant drug studies are added together, about 50% of people respond to medication, while 30% respond to placebo (where response is defined as a drop in depression scores of 50% or greater). This is a statistically significant difference but it is very modest conceptually and clinically. In fact, the superiority of the antidepressant medication is entirely due to the fact that it combines the chemical effect of the drug

with the placebo effect; placebo, on the other hand, offers only the placebo effect.

This can be proven as follows: if 50% of people respond to medication, but 30% respond to placebo, then 30% of the people who responded to medication would have done just as well if they had been assigned to placebo. Therefore only 70% of the people who responded to medication actually needed the chemical effect of the drug to get the response: 70% of 50% is 35%. The data tell us that only 35% of people who are randomly assigned to active antidepressant medication get a response that can be attributed to the chemical effect of the drug. This is not conceptually, statistically or clinically different from the 30% who respond to placebo alone.

The scientific study of human energy fields cannot begin if it is blocked by the sociology of dualism. Serious scientists rarely cross over into the "spiritual" domain for fear that they will be ostracized, demoted, excluded and otherwise punished by their peers for doing so. Believers rarely cross over into the "science" domain because

they see it as dealing only with dead atoms, not with the living forces they detect and heal in their therapies. East remains East, West remains West, and the twain never meet.

As soon as we collapse dualism, however, we are all in the same compartment. If spirit is a general property of matter then, instead of being superstition from the perspective of science, the beliefs of energy field healers are all testable scientific hypotheses. There is no need to look into another dimension or sphere for “the life force” – all we need do is measure the electromagnetic field of the human body.

This approach will provide both good news and bad news for energy field readers and healers. The good news is that, within the new science, we can now prove the objective reality of their therapies, as I will describe in later chapters. The bad news is the other outcome of the risk calculation: in some, or perhaps many cases, we will be unable to demonstrate that anything is happening at all. Energy field therapists need not be excessively alarmed by this outcome, however, because it is

quite possible that the scanners will not be sensitive enough to detect the subtle levels of the electromagnetic field involved in their therapies. If this is so, then the healer's hands, eyes or solar plexus are more precise and sensitive instruments than the electrical engineering equipment used in the science of human energy fields.

In a unified science, human hands and electrical engineering devices both belong to the category of scientific detection equipment. We need the electrical engineering equipment, though, to prove that our energy readings are not solely or merely subjective.

The good news for the skeptic is that his expertise will now be required and sought out by those who previously shunned him, which provides new opportunities for grants, industrial contracts, publications and promotions. The non-believer stance of the skeptic will have to be reconfigured. At present, many skeptics do not believe in "human energy fields" as a matter of policy. This is not a scientific attitude.

The Vocabulary of Skepticism and Belief

The skeptic and the believer often use different vocabulary to describe the same thing. The believer might call a phenomenon spiritual while the skeptic calls it pseudoscience. Skeptic and believer appear to disagree, but actually both agree on the underlying assumption of dualism: whether it exists or not, the thing under consideration lies outside science. Part of the process of paradigm change is creating a vocabulary for the spiritual that is acceptable to the skeptic.

For example, I could claim that I own a magical amulet that contains a concentrated energy more powerful than the entire energy field of the earth. This would be dismissed as impossible by most scientists. Actually, however, I can prove that this claim is scientifically true. How? I can use a magnet to pick up a paper clip – the magnet wins a tug of war against the gravitational field of the earth.

On another day, I could claim that I own a magic rock that has so much supernatural energy in it,

that I can use it to destroy an entire city. I could claim that I can make this happen by beaming invisible God energy at the rock. This doesn't sound very scientific until you realize I am describing an atomic bomb.

The new science could make human energy fields become mundane. There is nothing particularly transcendental or mystical about getting an EKG done. But it can be very useful, and the reading clearly correlates with one's state of health. Certain abnormalities in the heart chakra - in the EKG - can be corrected by specific medications. Further deterioration in the state of the heart chakra can be prevented, or even reversed by diet and exercise. Heart chakra readings, in the form of EKG's, are pretty good predictors of whether the light of the heart chakra is going to go out sooner rather than later.

For those not familiar with the chakra system, which has been studied in yoga, eastern medicine and related fields for millennia, there are seven chakras or energy centers in the human body. The base chakra is in the pelvic region and the crown

chakra is at the top of the skull (see Chapter 7 for more detail). Disease states arise from blockages in the flow of life energy, called kundalini in kundalini yoga, from the base chakra, up along the spine. The kundalini energy passes through the other chakras until it is discharged through the crown chakra at the top of the head. Healing involves restoring a proper balance and flow of energy through the chakras.

The caduceus of Mercury, the symbol of medicine, is a cultural transmutation of the stick of Brahma, which is the core symbol of kundalini yoga. The stick of Brahma is the spinal column and the snake entwined around it is the kundalini serpent, which is the primal energy that flows from the root chakra in the lower pelvis up to the crown chakra in the head. The roots of modern medicine are in an ancient energy medicine, which has been transmuted, disguised and forgotten, and which, in fact, is now forbidden by reductionist medicine. One purpose of the science of human energy fields is to reintegrate western medicine with this ancient form of knowledge.

How wonderful would it be if we could improve a cardiac arrhythmia by procedures like focused meditation, passing a healer's hands over the thorax, or sitting in an electromagnetic field in a special chamber? These are possibilities that warrant serious scientific investigation.

At present the science of human energy fields cannot proceed forward because it is blocked by the philosophy, sociology and vocabulary of dualism. That is why I have devoted, as I said, time, energy, space and matter to refuting dualism. Now I will move on to the science itself.

BASIC SCIENCE BACKGROUND

I am not a physicist and I don't have a Ph.D. in biology or physiology. The development of the science of human energy fields will require expertise that is beyond my skills and knowledge. In this section of Human Energy Fields, I describe the basic understanding of electromagnetic fields and biology required to read the third section of the book. No higher mathematics is required, for instance.

It is an established fact that some biological organisms – certain bacteria, skates, rays and sharks, for example - interact with the earth's magnetic field in a way that is organized, and part of their survival. The science of human energy field builds on and extends this known scientific reality into many different areas and applications.

4
BASIC FACTS ABOUT ELECTROMAGNETIC FIELDS

When it comes to equations and calculations, I understand physics at the level of an introductory, non-calculus, undergraduate course at a university. When it comes to the philosophy of science, I think it's fair to say that I function at the post-doctoral level. The science of human energy fields can be pursued mathematically at the quantum mechanical level, for both theory and electrical engineering applications. My role in that development is to do the verbal thinking – when it comes to the mathematics, I can't go there.

According to relativity theory and quantum mechanics, space, time, matter and energy are not separate things. They are intertwined with each other and are all aspects of a unified field of some kind. A unifying theory that ties everything together has not yet emerged, however. According to Einstein, the geometry of space is different near

a large object like the sun, compared to out in the empty regions between galaxies. Also, time is not constant: it goes faster or slower depending on velocity. From the perspective of a photon, time is at a standstill.

It is certain that every atom in the universe generates an electromagnetic field. Even empty space is not really empty – it is a space-time-energy soup of some kind. “Empty space” has mathematical structure and physical properties. The modern physics of space is very different from that of Newtonian physics.

Experiments performed in elementary school demonstrate the reality of invisible magnetic fields – I recall the rearrangement of iron filings on a sheet of glass when a magnet was placed underneath the glass. It is absolutely amazing that you can pick up a small iron object with a magnet weighing an ounce. The magnetic field of the magnet wins a tug of war against the gravitational field of the earth. This demonstrates the incredible weakness of gravity.

Similarly, electricity is invisible and intangible, until you touch a live wire or watch an electrical storm. We all know that lightning can kill people and split trees in two.

Electricity and magnetism are two sides of the same coin. Exactly how they are related to each other is an unsolved puzzle in theoretical physics, but I needn't worry about that when designing the science of human energy fields. Throughout, I refer to the electromagnetic (EM) field, though sometimes the electrical component will be of interest, and other times the magnetic component will be the target of the engineering applications.

Electromagnets demonstrate that electricity can be used to magnetize a piece of iron. Inversely, magnets can be used to generate an electric current. So, for my purposes, it suffices to refer generally to the EM field, since the theory and electrical engineering are beyond me.

EM fields can extend through wood, human flesh and many other materials. However, they can be blocked by other materials such as mu metal, an

alloy constructed for the purpose by combining together several different metals. When physicists want to study tiny particles like neutrinos they go to great lengths to insulate their instruments by burying them deep underground. For everyday purposes, however, we use rubber for insulating electrical wires. The degree of insulation needed for human energy field devices is within the reach of an average person's budget, although there will also be expensive research facilities.

The magnetic fields of interest in the new science are extremely subtle and weak. This is shown in Table 4.1 :

Table 4.1. The Strengths of Different Magnetic Fields (Tesla)

10^{-3}	Hair Dryer
10^{-4}	Earth Main Field
10^{-6}	Urban Noise
10^{-10}	Human Heart
10^{-12}	Human Brain

10^{-14}	Resolution of SQUID Magnetometer

The numbers mean that the magnetic field of a hair dryer is 0.001 Tesla; while the earth main field is 0.0001 Tesla. The field of the hair dryer is ten times stronger than the earth's magnetic field. The magnetic field due to general urban EM noise is a million times stronger than the brain's magnetic field. This means that urban EM noise could definitely have an effect on the human spirit.

A SQUID magnetometer is a super-conducting quantum interference device. It can measure very, very weak magnetic fields up to one hundred times weaker than the brain's magnetic field. This means that we now have the technology to measure the EM field of the entire body at a very precise level. SQUID magnetometers have to be placed in EM-insulated rooms, however, or else the brain's magnetic field is swamped out by background noise.

One can measure the electrical field of the brain with an electroencephalogram (EEG), and one can measure the magnetic field of the brain with a magnetoencephalogram (MEG). MEG studies have just begun to appear in research journals over the past few years because the technology only came on line recently.

The electrical fields of the body are stronger and easier to measure than the magnetic fields. Background noise can be eliminated by placing electrodes directly on the skin – on the scalp for an EEG and on the chest for an electrocardiogram (EKG).

This is all the physics required to understand the science of human energy fields at a verbal, conceptual level.

5
ELECTROMAGNETIC FIELDS IN BIOLOGY

EM fields definitely have an effect on human biology. This is demonstrated when someone is killed by lightning. A question is: how weak can an EM field become before it no longer has an effect on biology? The answer to this question is debated by biologists. However, since plants capture photons in order to make chlorophyll, it is certain that weak EM signals can affect biological functions. Federal governments around the world have safety standards for EM fields, and it is certain that fairly weak EM fields can affect biology, at a level that can't be registered consciously as an electric shock.

EM fields can knock you out and cause you to have a seizure. This is demonstrated by the electroconvulsive therapy (ECT) used in psychiatry. The amount of electricity delivered to the human brain during ECT violates federal safety standards

for industry. If such an exposure occurred in the workplace, it would be defined as an accident, and federal investigators would impose sanctions on the employer responsible for the accident. There might be a civil lawsuit.

It is certain, then, that EM fields can affect one's state of consciousness. Is there any evidence of the effect of natural EM fields, such as the earth's magnetic field, on the biology of insects and animals? Yes, there is.

But first, the natural sources of magnetic fields:

Table 5.1. Natural Sources of Magnetic Fields

Earth Main Field (liquid outer core currents)

Atmospheric Wind (motion of charged particles)

Sunspots, Solar Flares, Geomagnetic Storms

Interplanetary Field

Solar Wind – Magnetosphere Interaction

Northern Lights

Local Geological Variation

There are numerous fluctuating, interacting sources of magnetic field in which all biological organisms have been bathed for a billion years. The overall field is complex and its subcomponents can have measurable effects – for instance, solar flares can temporarily disrupt telecommunications. If solar flares can affect cell phones, then why can't they affect biology?

Just as the earth is surrounded by an atmosphere, so it is surrounded by a magnetosphere, which interacts with the solar wind, among other things. According to the science of human energy fields, we have evolved in the magnetosphere just as we have evolved to breathe oxygen and eat protein. There are interactions between the magnetosphere and our body EM fields that have been structured over eons.

In many ways, classical evolution is no longer operating on the human race. People who are taller, stronger, smarter, richer, more attractive and more athletic do not have as many children, on average, as their competition. The classical attributes that conferred survival and reproductive advantage ten thousand years ago often don't apply anymore. The same is presumably true for EM field interactions: if a primordial hunter could sense game or enemies by subliminally reading the EM field, that hunter would live longer, attract more mates, and have more offspring. The genes for his skill would be selected for over generations.

In the modern world, however, such skills confer no survival advantage because we get our food from grocery stores. Nevertheless, the body still needs protein for health and survival. The same logic applies to human energy fields: in order to be healthy, the human body EM field must be rooted in, and interact with the earth's magnetic field.

In order to affect cell phones, a solar flare doesn't interact with large biological molecules. The interaction of the solar flare with the chips in the

cell phone occurs at the quantum mechanical level, within and between individual atoms, as do all EM interactions. Likewise, the bonding between atoms that forms the basis of chemistry is always quantum mechanical in nature. The interaction between the earth's main magnetic field and the human EM field must also occur at the quantum mechanical level.

For there to be a biologically meaningful interaction between the earth's magnetic field and human life, there must be a trickle-down mechanism. The effect of the earth field on the human EM field must initially be at the quantum mechanical level. This must cause changes in the body's field that change the EM environment of individual atoms and molecules. This must in turn cause changes in ionization, membrane polarization, and bonding between atoms that are then translated into meaningful biological signals, such as release of hormones, neurotransmitters, second messengers inside cells, and so on. Likely, genes can be turned on and off by external EM fields. Filling in these steps will require countless experiments and hours of research, far beyond the capacity of any one person or laboratory.

A problem in contemporary biology, medicine and psychiatry is the fact that all are biological and chemical in their theories and level of analysis. Scientists talk about “the chemistry of life” just as Crick spoke of DNA revealing “the secret of life.” Chemistry reduces to physics, however, and physics reduces to quantum mechanics.

The limitations of biological-chemical models are apparent in biological psychiatry. There, psychiatric drugs are said to interact with receptors in the brain through a lock-and-key mechanism (the same logic is used in immunology to explain antibody functions). Diagrams of drug-receptor-neurotransmitter interactions show the drug fitting into the receptor based on the physical shapes of the receptor and the drug. An SSRI antidepressant (a selective serotonin reuptake inhibitor), for instance, blocks serotonin receptors because it fits into them, but not into noradrenalin or dopamine receptors.

This model is intuitively pleasing and easy to teach, but it is scientifically impossible because the physical structures of the different SSRI

medications are extremely different from each other. They cannot be physical keys specific for the serotonin lock. In general, I would say, the physical shape (the conformation) of a signal molecule has little to do with its interaction with a target receptor. It is more likely, I think, that the SSRI-receptor interaction is electromagnetically specific – this could be proven by showing that the EM signatures of all SSRI medications are similar, while their physical shapes vary widely.

Once a quantum mechanical model of biology is in place, then there is nothing mysterious or surprising about EM fields playing a crucial role in biology and physiology. Biology and chemistry reduce to EM interactions between the electron clouds of atoms. I was taught in medical school, for instance, that the uptake of oxygen by hemoglobin depends on the operation of a quantum mechanical law (called the Pauli Exclusion Principle) in the outer electron shell of the iron atoms in the hemoglobin.

Biologists who state that weak EM fields have no biological effects must be mistaken: all of biology

works by weak EM interactions between atoms. The interaction of weak EM fields with biology is illustrated by the fact that plants capture photons in order to synthesize chlorophyll.

As depicted in Table 5.2 , we already know that a variety of biological systems use geomagnetic navigation. The biologically meaningful interaction of birds, fish and bacteria with the earth's magnetic field is a proven fact. The honeybee dance, the migration of birds, and the navigation of homing pigeon, sharks, skates, rays and certain bacteria have been proven to use the earth's magnetic field.

Table 5.2. Biological Systems That Use Geomagnetic Navigation

Honeybee Dance

Bird Migration

Homing Pigeons

Sharks, Skates, Rays

Certain Bacteria

Given Table 5.2 , it is likely that a wide range of interactions occurs between natural magnetic fields and the body EM field. Many of these likely trickle down to the biological level. However, meaningful, measurable effects on the body EM field could occur that never trickle down to the biological level. For instance, a spiritual emptiness in urban, industrial man resulting from disconnection from the earth main field might not have any biological component.

In order for the science of human energy fields to enter mainstream science, lock-and-key, conformational models of neurotransmitters, hormones, second messengers inside cells, antigen-antibody interactions, and the full range of biological signals and communications systems must give way to EM signature models. There could be examples of both types of interaction in nature, and the models need not be mutually exclusive, but EM signatures must play a significant role in many biological processes, including transport of

molecules and atoms through cell membrane channels.

Evidence that the controls for many biological processes are at the EM level is beginning to emerge. In terms of accessible books, The Body Electric: Electromagnetism and the Foundation of Life by Robert Becker and Gary Selden is the best source of information. Becker published many experiments showing that bone healing is controlled electromagnetically, and his research has lead to orthopedic surgeons applying external EM fields to fractures that are failing to heal, in order to switch on the stalled healing mechanisms.

When an EM model of biology is in place in mainstream science, study at the biological level will still be necessary, as will psychology. It is impossible to study the function and purpose of biological molecules and interactions purely at the quantum mechanical level. Quantum mechanics alone cannot explain why it is helpful to be able to bend your leg at the knee, or why it is useful to have eyes. The circle of reductionism determines

the logic of the system, and all locations on the circle are part of the whole story.

For instance, there is no particular reason why it is intrinsically desirable to have your presynaptic serotonin receptors occupied by an SSRI antidepressant (see Chapter 8 for an explanation of SSRI antidepressants and receptors). Empty presynaptic receptors are not a disease state or an abnormality. It just so happens that inserting an SSRI into the receptor triggers a complex chain of reactions in the post-synaptic neuron, which somehow improves the mood of some, but not all, people who are clinically depressed. The FDA could not decide to approve an SSRI for sale solely by studying the quantum mechanics of its interaction with receptors. Other levels of information are required to make an evidence-based decision.

The science of human energy fields requires a unified approach to the mind-body field. The contributions of psychology, anthropology, biology and physics are equally important, and no one of these fields is more fundamental than any other. For the science of human energy fields to enter the

mainstream, it must be true that weak EM fields can have meaningful effects on the human body and spirit.

THE SCIENCE OF HUMAN ENERGY FIELDS

This section of the book describes the science of human energy fields in detail. I provide examples of experiments, research studies, instrumentation and applications in a wide range of fields including general medicine, psychiatry, anthropology, agriculture, security and weapons systems, and energy healing. The science unifies eastern and western medicine and makes it possible to study the life force, chi, and the human aura – in my view, different words for the same thing – within western science.

6
THE HUMAN EYEBEAM: A CRUCIAL EXPERIMENT IN THE NEW SCIENCE

> Dear reader or, better still, dear lady reader, recall the bright, joyful eyes with which your child beams upon you when you bring him a new toy, and then let the physicist tell you that in reality nothing emerges from these eyes; in reality their only objectively detectable function is, continually to be hit by and to receive light quanta. In reality! A strange reality! Something seems to be missing in it.
>
> Erwin Schrodinger
>
> What Is Life? (1944)

If we prefer, we can think of the phenomenon of sight as the Greeks did, regarding the eye not as a kind of sensitive plate, but as the source of antennae or tentacles which stretch out and seize on the properties of the object it surveys.

For to say "light travels" reflects the nature of reality, in a way which "his eyes swept the horizon" does not, is to point to the fact that the latter remains at best a metaphor. The optical theory from which it came is dead. Questions like "What sort of brooms do eyes sweep with?" and, "What are the antennae made of?" can be asked only frivolously. The former does more: it can both take its place at the heart of a fruitful theory and suggest to us further questions, many of which can be given sense in a

way which the questions suggested by “His eyes swept the horizon” never can.

Stephen Toulmin

The Philosophy of Science (1953)

Could an erroneous, ancient theory of visual perception still be a commonly held belief of children and adults at the end of the 20th century? A number of ancient philosophers, including Plato, Euclid, and Ptolemy, believed in what has been termed the extramission theory of visual perception. This extramission theory stressed that there were emanations from the eyes during the act of seeing. That is, essences or the like were thought to leave the eye during the act of visual perception. With advances in the sciences of optics and physiology, the extramission theory was replaced by what is called the intromission theory. This theory holds that there is only input to the visual system and that this information alone allows people to see. The extramission theory was ultimately put to rest in scientific and philosophical circles in the early 17th century, although informed opinion had generally dismissed extramission notions as early as the 13th century.

Gerald Winer

American Psychologist (1996)

The Schrodinger wave equation is used throughout quantum mechanics, and its originator is one of the great figures in the field, along with Planck, Bohr, Heisenberg, Pauli, Einstein and others. Einstein received his Nobel Prize for work on the particle nature of light and the photoelectric effect, not for

his theory of relativity. In the above quotations, Schrodinger, Toulmin and Winer are stating the unanimous view of modern science concerning the human eyebeam: it doesn't exist. Unlike most scientists, however, Schrodinger is willing to consider that something might be missing from the modern scientific model of the universe.

In psychology, the technical term for the eyebeam is extramission. Extramission involves something going out through your eye and interacting with the outside world. Intromission, on the other hand, involves light entering your eye and being detected by your retina. Extramission is an active process while intromission is passive (setting aside the active choice of where to look). Human visual perception, according to modern science, was fully described by the seventeenth-century English philosopher John Locke. According to Locke's model of perception, the eye receives light passively and the processes involved are mechanistic and physiological. Since Locke, the science of human visual perception has involved filling in the details, but the basic model has not changed.

In his An Essay Concerning Human Understanding, published in 1690, Locke said that visual perception is passive: “in bare naked perception, the mind is, for the most part, only passive; and what it perceives, it cannot avoid perceiving.” The active component of visual perception, according to Locke, is the mind’s reaction to “bare perception” – this involves the interaction of ideas with the sensory perception. Locke also described the reception of photons by the retina, and stated, in antiquated vocabulary, that physical properties of the photons (their number and frequency in modern terms) determine the intensity and color perceived by the mind (p. 300-301):

> For supposing the sensation or idea we name whiteness be produced in us by a certain number of globules which, having a verticity about their own centres, strike upon the retina of the eye with a certain degree of rotation as well as progressive swiftness; it will hence easily follow that the more superficial parts of any body are so ordered as to reflect the greater number of globules of light and to give them that proper rotation which is fit to produce this sensation of white in us, the more white will that body appear that, from an equal space, sends to the retina the greater number of such corpuscles with that peculiar sort of motion. I do not say that the nature of light consists in very small round globules, nor of whiteness in such a texture of parts as gives a certain rotation to these globules when it reflects them, for I am not now treating physically

> of light or colours; but this, I think I may say: that I cannot (and I would be glad that anyone made intelligible that he did) conceive how bodies without us can anyways affect our senses but by the immediate contact of the sensible bodies themselves, as in tasting and feeling, or the impulse of some sensible particles coming from them, as in seeing, hearing, and smelling; by the different impulses of which parts, caused by their different size, figure, and motion, the variety of sensations is produced in us.
>
> Whether then they be globules or no, or whether they have a verticity about their own centres that produce the idea of whiteness in us, this is certain: that the more particles of light are reflected from a body, fitted to give them that peculiar motion which produces the sensation of whiteness in us, and possibly too, the quicker that peculiar motion is, the whiter does the body appear from which the greater number are reflected; as is evident in the same piece of paper put in sunbeams, in the shade, and in a dark hole, in each of which it will produce in us the idea of whiteness in far different degrees.

A psychologist named Gerald Winer has published a series of articles in which he describes the results of surveys he has given to college undergraduates. He is very concerned that many college students believe in the reality of extramission. Winer sees this as a failure of science education, and calls for a greater effort to teach basic science to students. Winer, like virtually all other modern scientists, is absolutely certain that the human eyebeam does not exist. According to contemporary western

science, the human eyebeam is “paranormal,” which means it lies outside science and cannot be studied with the scientific method.

The human eyebeam is the foundation of the evil eye belief. According to folklore in Italy and other countries, one can cast malevolent energy into other people by giving them the evil eye, by staring at them with evil intent. Virtually all, if not all, anthropologists, ethnographers, and folklorists agree with Gerald Winer that this is pure superstition. It has to be, within the Lockean model of human visual perception, which does not allow extramission.

One problem with Locke’s doctrine of extramission is the common and universal sense of being stared at. Everyone has had the experience of suddenly turning and locking eyes with someone looking directly at you; or, looking at someone and having them turn to look directly at you. Everyone knows this is not merely coincidence, peripheral perception of subliminal cues, or anything but a real experience, yet modern science says that there is no human eyebeam, therefore sensing someone

else's stare is impossible. The Lockean model forces scientists to deny the reality of common human experience.

Modern science rejects and disallows two intertwined propositions:

1. Extramission is real.
2. Extramission is involved in visual perception.

It is possible, in principle, that the human eyebeam exists but is irrelevant to visual perception. It could exist but simply be accidental noise with no physiological function. Or, the eyebeam could be involved in perception in a targeting or focusing fashion, with no information back-transmitted to the person emitting the eyebeam. Finally, the eyebeam could be real, and it could gather meaningful information that is back-transmitted to the person. This would be like the sonar used by bats, except it would be EM radiation. Since bats use sound for navigation, it is perfectly possible that various species use the eyebeam for various purposes. Within the science of human energy fields, all of this can be investigated experimentally.

Based on the two propositions about extramission given above, research on the human eyebeam will be conducted in two stages: 1) demonstrating its existence and electrophysiological properties, and 2) investigating its function as a signaling and information-gathering system.

An example of a possible biological function of sensitivity to eyebeams, in humans and other animals, is the interaction between hunter and prey. If a gazelle can sense the eyebeam of a lion and take evasive action, surely that skill will be selected for during evolution. The eyebeam of the lion could be sensed consciously or subliminally. Conversely, a hunter (or sniper) who noticed that too intense a stare at a target alerted or frightened the prey would learn not to fixate too intensely or for too long on the target. This skill would be selected for during the evolution of the predator species.

The human eyebeam has been relegated to the domain of the “spiritual” – meaning superstition, magical thinking, the supernatural, or the paranormal. The science of human energy fields

generates a competing hypothesis: the human eyebeam is objectively real, and measurable. Why do I make this prediction, and why is detection of the human eyebeam a crucial experiment in the new science? To arrive at this crucial experiment, I followed the sequence of steps outlined at the end of Chapter 2 (Table 2.1).

Direct Conscious Experience Of The Eyebeam

I have felt the human eyebeam many times, most intensely in Italy. For instance, I recall riding in a bus in Rome and seeing a gorgeous Italian woman walking along on the busy sidewalk. I stared at her intently. She walked along for five or ten feet while I stared at her, then turned without hesitation and looked directly into my eyes. We exchanged a signal of mutual recognition, she turned away, and the bus carried on past her.

Another time I remember standing in a bus in Italy and feeling someone staring at my cheek. I could detect the eyebeam in a circular area about an inch in diameter on a specific location on my cheek. I

turned, and saw that another passenger was looking directly at that spot, judging by her direction of gaze.

Yet another time I was hunting alone in the woods in Whiteshell Provincial Park in Manitoba, Canada in September, 1971. I suddenly felt a rabbit looking at me from behind. I consciously thought that a rabbit was staring at me, turned around, shot it with my 16-guage shotgun, and later ate it. I concluded that my increased sensitivity to the eyebeam was due to being outside the electromagnetic noise of the urban environment.

Not Dismissing This Experience As Invalid

Rather than telling myself that this was coincidence, auto-hypnotic illusion, subliminal auditory cueing, or some such phenomenon, I elected to regard my experience of eyebeams as real and valid. This was the essential second step in development of the new science. In the 1970's I wrote at length about that I called the spiritual physics or, alternatively, the knowledge of spirit

power. Most of this writing was never published at the time, including an essay on the human eyebeam I wrote at the University of Alberta during my pre-medical studies – I received my M.D. from there in 1981. I have collected these writings together in my books, Diary of An Intern and Other Short Stories, Northern Canada and Literary and Anthropological Studies.

Regarding The Experiences As Scientifically Verifiable

While in pre-med, in early 1976, I conducted an initial experiment to detect the human eyebeam. I borrowed a photomultiplier from my physics professor, who was a Professor of Biomedical Engineering, and tried to activate it by looking into it in a dark room that had only a dim red light such as one uses in a photo developing lab. All I got was background noise and I gave up. At the time, I had no idea what kind of energy the human eyebeam might be made out of, so I guessed that it might be photons in the visible spectrum.

Studying The Problem Carefully Through Reading And Thinking

During my medical school years from 1977 to 1981, and my psychiatry training from 1981 to 1985, I continued to read intermittently about anthropology, the philosophy of science, and other subject areas related to human eyebeams, but I never had time or energy to focus on the problem. I began to formulate the science of human energy fields in a more crystallized fashion in the early years of the twenty-first century, and I published two books describing the experiential foundation of the new science in 2004 – Songs For Two Children and Spirit Power Drawings. Besides organizing my unpublished writings for publication, I began to do talks at mental health conferences on the new science, plus I mentioned it briefly in other workshops that focused on my Trauma Model.

By 2006, I had outlined the new science in detail to a number of friends and colleagues and had started writing this book. I read the books in the bibliography in the period 2004 to 2008.

Refuting Cartesian Dualism Proposing That Spirit Is A General Property Of Matter

These two steps I accomplished by writing Chapter 1 of this book.

Designing The Experiments, Instruments And Predictions Of The Science

I arrived at the Human Eyebeam Detection System, for which I hope to receive a patent in 2009, through a series of additional steps. I continued to think about what kind of energy the human eyebeam might be composed of, and I narrowed it down to electromagnetic energy. I learned in medical school that the human brain generates an electromagnetic field that we measure as an EEG. When there is a sudden, severe, chaotic electrical storm in the brain, this is readily detectable on an EEG, and readily detectable behaviorally as a generalized seizure.

To take an EEG, electrodes are applied to the scalp, and good conduction is ensured by using a

conducting paste under each electrode. The EEG reading proves that the field is transmitted through the skull. I then thought to myself that the field obviously doesn't stop at the surface of the skin – it extends out into space. I learned by literature and internet searches that electrical engineers can detect a human EEG at three feet distance from the person, using sensitive electrodes and an electromagnetically insulated room. The insulated room is required to eliminate the background noise that would otherwise swamp out the EEG signal.

Unfortunately, I also learned by talking to a contractor that one of these rooms costs $250,000.00 to build. I continued with my thinking. I decided that the human eyebeam must be more intense than the general electromagnetic (EM) field of the brain because it does not have to pass through the skull. There must be some degree of signal attenuation due to the meninges, skull, scalp muscles and skin. Also, I thought, there may be some focusing of the brain EM field out through the eyes simply because of the internal geometry of the skull, but, more importantly, I thought there might be an increased amplitude to the eyebeam

due to conscious focusing combined with signal transmission in reverse along the optic nerve and out through the eyeball.

I then said to myself that it would be possible to set an EEG electrode inside an EM-insulated room so that software connected to it was not activated by the general EM field passing through the skull and out into the room, but only by the higher-amplitude signal of the eyebeam. This would result in the electrode activating the software only when a person looked directly at it. What I had, then, was an on-off switch activated by looking at it from a distance. In principle, this on-off switch could be connected to any device on the planet, from garage door openers, to alarm clocks, to security systems, to weapons, to personal computers, to toys, to electric coffee pots.

The only hitch was the requirement for a $250,000.00 EM-insulated room to use the device. I solved this problem, at least for a range of applications, when I realized that the person didn't have to be inside the room. The "room" could be the size of a pair of binoculars, and the person

could look into it through apertures at one end, with the electrodes inside the room at the far end, connected to a computer. The computer could be miniaturized and the digital information could be downloaded via a wire, a memory stick or a wireless connection to a larger computer or computer network.

I now had the equivalent of a Ghost-Buster Box, except that it would be an Eyebeam Buster Box. I realized that I could challenge the magician and skeptic of the paranormal, James Randi, who offers a prize of $1 million to anyone who can objectively demonstrate the paranormal. I realized that the human eyebeam met his criteria for a paranormal phenomenon that lies outside science and defies the laws of known science. Randi specifies on his web page (www.randi.org) that a successful challenge does not depend on demonstrating the mechanism of the phenomenon, only the phenomenon itself. The human eyebeam qualifies because it is not permitted by modern science, and is regarded as paranormal.

I also thought about commercial applications of a Human Eyebeam Detection System. If one could set the electrodes in an EM-shielded box that was open at one end, and if the electrodes were sufficiently recessed and sensitive, then one should be able to use the system in an urban environment. If the electrical engineering problems could be overcome, then countless possible applications would follow. A quadriplegic or a baby could turn on a light or an alarm system by looking at a sensor upon awakening, without any need for an EM-insulated room.

In a hospital, an initial EEG could be taken by a nurse who handed a pair of EEG binoculars to a patient, either as a routine screen or after a seizure. This would be far cheaper than sending the person down to the EEG lab, especially in off-hours. The equipment would be particularly useful for distinguishing real epileptic seizures from pseudo-seizures – this differentiation is often difficult or impossible to make by observation. This is an application I am particularly interested in as a psychiatrist, because pseudo-seizures are not rare in survivors of childhood sexual abuse.

Perhaps the Human Eyebeam Detection System could be included in virtual reality goggles and could be used to provide a biofeedback signal, or information about arousal state, say, in someone with a fear of heights who rides up in a virtual glass elevator.

If a practical on-off switch was feasible, I thought, there was no end to the potential applications. The system could provide another level of security in vaults, classified spaces, or other locations.

The James Randi Educational Foundation Paranormal Challenge

Submitting a claim to the James Randi Educational Foundation paranormal challenge (www.randi.org) required some prior tinkering and experimentation. In December, 2007 I took a five-day neurofeedback course that provided the basics in how to apply electrodes to the scalp and use the hardware and software I had purchased from a manufacturer. The equipment I used was a Brain Master Atlantis II (www.brainmaster.com) that I purchased for less than $2000.00 and the course

director was John Demos (2005), an experienced neurofeedback clinician. I also joined the International Society for Neurofeedback Research (www.isnr.org).

Once I had completed the course, I knew that human brainwaves are divided into several categories according to their frequency in Hertz, or cycles per second (we skimmed over this in medical school and in my psychiatry residency, but never studied it thoroughly). For neurofeedback purposes, the beta range is often subdivided into beta proper and SMR, as shown below, but the Brain Master software divides it into Lobeta, Beta and Hibeta:

	Hertz
Delta	1-4
Theta	4-8
Alpha	8-12
SMR*	12-15
Beta	13-21
High Beta	20-32
Gamma	38-42

*SMR = sensorimotor rhythm

I learned about the distribution of different frequencies over the scalp, where to place electrodes, and the findings concerning depression, anxiety, attention deficit disorder and other psychiatric disorders. In some disorders, the amplitude in microvolts (μV) of a certain frequency band can be too high over a certain part of the scalp, while in another it can be too low. For instance, in depression there is often, but not always, too much alpha over the left hemisphere, while in anxiety disorders there can be too much beta over the anterior right hemisphere. None of these patterns occur in all cases and none is specific to any disorder, but when the classical pattern is present, neurofeedback training in that specific frequency band over that specific part of the skull can result in dramatic improvement in the anxiety or depression.

Since the human eyebeam does not exist in western science, however, there was no information about it in the course or the text book. I therefore had to build a Human Eyebeam Detection System by trial and error. After some initial efforts, I decided to use a pair of diving goggles from a sporting goods store

as my EM-insulated “room.” I mounted an electrode on the inside of the mask in front of my right pupil, and fed the electrode wire out under the mask to the connector, which in turn fed the signal to the Atlantis II unit, which processed it and sent it to my laptop computer. For EM insulation I used layers of tin foil from a grocery store and wire mesh from a hobby and craft store, which I taped to the front of the right half of the goggles.

I spent hours fiddling with the equipment and taking test EEG’s of my own eyebeam until I got the system adjusted satisfactorily. I had learned in my neurofeedback course about “alpha blocking,” which is well recognized and validated in the EEG field. If you measure the alpha band with a person’s eyes open, you will get a certain amplitude, measured in micro-volts (μV). If you repeat the reading with the person’s eyes closed, however, the amplitude of the alpha waves goes up noticeably. In other words, opening your eyes blocks alpha.

By trial and error I discovered that a considerable degree of blocking for the human eyebeam occurs in the delta band, with the pattern reversed: delta

amplitude goes up when you open your eyes. This can also be observed if you place an electrode on the scalp just above the right eye, in a location called Fp2 in the EEG literature. Delta blocking in the human eyebeam could, in principle be due to the delta being blocked by the eyelid when you close your eyes, but since reversed delta blocking also occurs at Fp2, the data prove that delta blocking in the eyebeam is a real difference in the brain and the eyebeam, not an artifact of the eyelid getting in the way.

The data from my initial experiments proved that the human eyebeam exists and has a greater intensity (amplitude in μV) than the general field emerging through the skull. The eyebeam is physiologically active in that it fluctuates with brain state (it exhibits reversed alpha blocking). In addition, the electrophysiology of the eyebeam differs from that of nearby brain: alpha blocking is reversed in the eyebeam and follows the same pattern as delta in the eyebeam (eyebeam amplitude goes up with eyes open at these two frequencies); at Fp2 conventional alpha blocking is observed (at Fp2, alpha goes up with eyes closed).

This reversal of alpha blocking in the eyebeam compared to Fp2 is something that needs further study. Typical numbers obtained with my equipment are:

Table 6.1. Simultaneous Amplitude Readings (μv) of the Eyebeam and on the Scalp (Fp2) with Eyes Open and Closed

Fp2

	Delta	Theta	Alpha	Lobeta	Beta	Hibeta	Gamma
Eyes Open	6.80	4.14	4.94	3.47	5.85	2.28	0.35
Eyes Closed	5.61	4.26	8.41	4.39	6.08	4.95	1.44

Eyebeam

	Delta	Theta	Alpha	Lobeta	Beta	Hibeta	Gamma
Eyes Open	17.06	14.46	21.79	24.94	28.95	15.38	7.53
Eyes Closed	12.68	9.36	13.29	20.76	40.04	21.06	5.46

For these experiments, the ground electrode was on my right mastoid, the reference electrode for the eyebeam was on my right earlobe, and the reference electrode for Fp2 was on my left earlobe. This information is included for anyone wanting to replicate the findings using standard silver chloride

electrodes. Data were obtained from 10-second assessment sessions.

I thought that an effective way to demonstrate the reality of the human eyebeam, for the James Randi challenge, would be to use the standard Brain Master neurofeedback software, and set the reward threshold for delta at, say, 20 μV for a training session (this would have to be determined by trial and error). The reward tone does not sound during assessment sessions, which are selected using the software. The most useful reward threshold value varies a bit from person to person, and must be determined by trial and error. The readings in Table 6.1 are average values over a 10-second assessment run, and show that delta is above 15 μV when your eyes are open (it may fluctuate below 15 μV once in a while, since this is an average value over 10 seconds).

In neurofeedback training, you can set the reward feedback threshold in several different ways, but, basically, if you want to reduce the amplitude of a selected frequency band, say, alpha, at a certain standard scalp location, you set the software so that

it rewards the brain when the amplitude goes below a threshold value. Then you choose a tone from a catalog of tones and run a training session. When alpha is above threshold there is silence, and when it is below there is a tone. Other software provides visual rewards, but the principles are the same.

Conversely, if alpha is too low, you set the software so that the tone is heard only when the amplitude is above threshold. In response to the feedback, the brain adjusts the amplitude of the selected frequency band at that location, and the clinical problem is treated, when the procedure works.

I submitted a challenge to the James Randi Educational Foundation. The challenge had to follow the rules on his web page (www.randi.org), which it did and I included quotations from Toulmin and Schrodinger as well as a Gerald Winer paper to establish that the human eyebeam is "paranormal" according to both western science and James Randi's criteria.

My challenge was that I could send an energy beam out of my eyes, capture it in a set of goggles I had

constructed, and use the energy to make a tone come out of a speaker. I said that there are various names for this type of energy and I said that I think it is the energy called chi in Chinese medicine, and called the human aura in the west. James Randi states in his challenge rules that he does not want to hear about the theory or the philosophy behind the challenge, he only wants to see the phenomenon demonstrated. Additionally, his rules state that once a paranormal challenge has been accepted, as mine was, subsequent demonstration of the scientific mechanism behind the phenomenon does not invalidate the challenge. This rule confirms that it is the phenomenon that is classified as paranormal for purposes of the challenge.

That is why my challenge was accepted. The human eyebeam meets all the criteria for “the paranormal” required by modern science, and by the rules of the James Randi challenge. There is in fact nothing “paranormal’ about brain waves emerging through the eye, since they also emerge through the skull. That is the whole point: “paranormal” is a sociological category, not a scientific category.

Many things are consigned to the category of "paranormal" by western science, including the human eyebeam. Some things in this category are real, however, and perfectly scientific.

Once a "paranormal" phenomenon is measured and understood, then it is switched from the category of paranormal to the category of scientific. But it never was paranormal in the first place: putting it in that category was based on attitude and bias, not on scientific thinking. This is true of human energy fields in general. The intellectual purpose of my James Randi challenge was to get an independent confirmation from a skeptic of the paranormal that the human eyebeam is a "paranormal phenomenon." James Randi was accurately representing all of western science in this regard, not merely stating a personal opinion.

Why This Is A Crucial Experiment In The Science Of Human Energy Fields

The experimental proof of the reality of the human eyebeam is a crucial experiment in the science of human energy fields. I chose the detection of the

human eyebeam as the initial crucial experiment for a number of reasons. First, a prototype system was within my personal financial resources. In addition, the existence of the human eyebeam was explicitly forbidden by psychologists, physiologists, physicists and virtually all other modern scientists, because of their model of human visual perception – intromission. The history of the model can be traced back to John Locke.

Turning a switch on and off by looking at it conclusively demonstrates that the human energy field interacts with the physics of the outside world in a measurable, replicable fashion. Once eyebeam technology is commercially available, I reasoned, then everyone will know from direct experience that their personal energy field interacts with the outside material world. Once this is proven for the human eyebeam, then it becomes a testable scientific hypothesis that the human energy field in general interacts with the outside world. Further, one would expect there to be a counter-signal from the environment back to the transmitting person. We then would have a digital communication

system that could in principle transmit meaningful information.

The interactions of the human energy field must have evolved in the biosphere like all other aspects of the human organism. Sensitivity to incoming and outgoing signals likely must have conferred survival advantage and been selected for, at least up to the dawn of western civilization. I therefore began to think about how all of this might work, and whether other parts of the human body emit signals of importance. From my own experience, and from my reading, I hypothesized that the solar plexus (the celiac ganglion) is a major transmitter-receiver for human, geophysical and other electromagnetic signals.

I thought to myself: if cell phones work, why can't there be biologically meaningful communication within the biosphere using electromagnetic fields? Specific testable hypotheses from this line of thinking are outlined in later chapters.

7
THE PSYCHOPHYSIOLOGY OF GUT FEELINGS

Another example of a common human experience denied by modern science is gut feelings. Common expressions such as, I feel it in my gut, I just go with my gut feeling, I listen to my gut, it just feels wrong in my gut, and even, I hate his guts, all have a foundation in valid, researchable reality. Here the problem is not so much dualism or reductionism as an additional doctrine of modern science: the mind is linked to the brain, and only to the brain.

According to reductionism, the mind is caused by and can be reduced to the brain. Causality is not allowed to run in the opposite direction, even when dualism is allowed: the mind cannot cause the brain. Virtually all modern models that regard mind as an emergent property of the complex biochemical function of the brain, nevertheless adhere to the doctrine that the mind is located only

in the brain. There is no mind in your elbow, for instance.

One of my goals is to prove scientifically that mind is not located solely in the brain. For one thing, the EM field extends far outside the body, and interacts with the physics of the material world in a biologically meaningful fashion – this is a testable hypothesis of the science of human energy fields that I will expand on in later chapters.

The Human Mind Is Located Throughout The Human Body, Not Just In The Brain

The mind can be described as being located in, near, above, or in conjunction with the brain. The terminology doesn't matter because all possible terms are equally metaphorical, and none can be differentiated from any of the others experimentally. If mind is a general property of matter, then a form of mind must exist throughout the body. This does not mean that your elbow has opinions on U.S. foreign policy, however. Only the cerebro-cortical mind, the mental mind (Descartes'

rational soul) thinks about and knows the world in that way.

Mental mind, however, is not the only kind of mind – there are as many varieties of mind as there are varieties of tissues, and varieties of species, plant and animal. Western science has limited itself by allowing human mental mind to be the only type of mind in the universe. Only the human cerebral cortex generates mind, according to this viewpoint, and only human beings have language and consciousness. It follows from this doctrine that animals cannot think, despite the communication patterns of dolphins and other species. Even talking parrots with 400-word vocabularies are allowed to be no more than automatic speech-production machines – they are not allowed to have “minds.”

This doctrine leads to the proposition that only neurons in the frontal human cerebral cortex generate consciousness. There is zero possibility that this proposition can ever be proven scientifically. This is so because the proposition is based on an erroneous model of mind. For one thing, mind is allowed to emerge only from the

brain, only from the cortex, and only from one portion of the cortex – the model suffers from the core logical flaw of all emergent property models. But simply at a practical level, no one will ever demonstrate an electrochemical property of frontal cortical neurons that is unique to those neurons. The laws of physics are the same throughout the brain, and no "emergent property" (no rational soul) is allowed by materialist science.

Another logical problem is the boundary between conscious neurons and unconscious neurons. No such boundary exists in nature, although emergent property models require it. Clearly, some parts of the brain are involved in language and some are not. No boundary between these regions can ever be demonstrable biologically, however, if mind is a general property of matter. Western science is dominated by frontal-cortical chauvinism: western intellectuals and academics claim that human mental mind is the only form of mind. This is actually a description of the typical western human energy field, which contains a dissociation between the head and the body, but it is not an accurate description of other psychologies or cultures, or

other species (this is a testable hypothesis within the new science).

The human mind, or spirit, extends outside the human body and interacts with the outside material world. It also originates in all areas of the body, one of those areas being the myenteric plexus, the hypogastric plexus and the entire nervous system of the abdomen. According to western science and medicine, however, emotions are generated solely in the limbic system of the brain and are sent up to the frontal cortex for conscious registration. There is input from the gut in the form of sensations like distension, crampiness, pain and so on, but these nerve signals are electrical and unconscious until they are received and processed by the brain.

The term gut feelings, according to western medicine, is merely a way of talking or a subjective illusion. The gut cannot have feelings anymore than rocks or plants can, according to materialism and reductionism. Here we have another variation on the animate-inanimate matter distinction. If only the human frontal cortex can consciously experience feelings, then that matter must generate

an emergent property absent in all other forms of matter, which takes us back to dualism and Descartes' rational soul. If no élan vital is allowed, then humans cannot have thoughts or feelings either.

I propose that the gut does have feelings and that the mind is generated not just by the brain but by the entire human body.

Testing The Theory That Gut Feelings Are Literally Real

Experiments to prove that there is mind in the gut can be conducted without a Whole Body EM Scanner. A conventional multi-lead EEG machine would suffice for preliminary research. If mind is generated only by the brain, then it is absurd to attach EEG electrodes to the thorax or abdomen. If there is mind in the body, however, it makes perfect sense. This is another example of how dualism and reductionism block the science of human energy fields from ever developing.

An eight-lead EEG would suffice. I would place leads on the forehead (forehead chakra), throat, sternum (heart chakra), over the celiac plexus (solar plexus chakra) and over the hypogastric plexus. The remaining two leads could be placed on any limbs as reference leads. I applied for a patent for this application of existing EEG technology in 2008.

A wide range of different challenges and tasks could be undertaken experimentally using normal volunteers. For instance, a baseline could be obtained with a calm neutral image and sound track on a computer. Suddenly, the video would switch to an alarming, frightening image from a horror film. This would generate a detectable spike in the forehead EEG. A signal would then be transmitted from the brain to the abdomen, which could be tracked as it passed under the throat, heart and celiac ganglion leads.

A gut response-spike would then be observed in the hypogastric lead, and a response signal would be sent back to the brain, resulting in a modification of the brain EEG. This would be the head and gut

talking to each other, and the gut participating in the evaluation of and response to the stimulus. One could add serial blood cortisol and adrenalin levels, heart rate, galvanic skin response and other measures to the protocol.

A sad video, in contrast, would cause a preferential activation of the heart chakra, because we feel sadness with our hearts, not just our brains. Similarly a video of a much-loved child or pet would stimulate the heart chakra more than the throat or hypogastric leads. In principle, in experimental animals, various nerve pathways could be cut to investigate the exact transmission routes of such signals.

A more sensitive form of lie detector could potentially be developed using the Chakra EEG System. The person would know in his gut that he was lying. As well, the responses of normal volunteers could be studied after they had received different medications, participated in meditation or hypnosis exercises, and so on.

Posttraumatic stress disorder, panic disorder and simple phobia would provide good laboratory models for studying the participation of the gut in the evaluation and processing of danger signals. I predict a highly amplified gut reaction to phobic stimuli in people with anxiety disorders compared to people without those anxiety disorders. I predict a significant difference in gut EEG profile between people with phobias before and after successful treatment.

In posttraumatic stress disorder (PTSD), I predict that there is a significant hyper-reactivity in the gut, not just in the brain. Some cases of PTSD may fail to respond to conventional treatment because much of the problem is in the gut mind, not the brain mind. Neurofeedback with electrodes placed on the abdomen might help people who have not responded to conventional biofeedback, medications or cognitive-behavioral therapy.

The advantage of the Chakra EEG system is that it can be purchased from many different suppliers for a few thousand dollars. No change in the technology is required, only in its application and

in the scientific model behind the application. The Chakra EEG System could be used in biofeedback as well as in diagnosis and evaluation of response to cognitive behavioral therapy or medication.

I have used PTSD, panic disorder and phobias as examples, but the procedure could be evaluated in all disorders and for all treatments. For instance, I predict a faulty brain-abdomen communication system in autism and attachment disorders. In somatization disorder, I predict an abnormally high activation of the body EM field.

Data From The Solar Plexus Chakra (Celiac Ganglion) Using A Two-Channel Biofeedback System

I gathered data from a volunteer by placing electrodes over the right eyebrow at Fp2, over the heart and over the celiac ganglion. For the heart, I used an electrode position in the midline about two centimeters inferior to (lower than) the nipple line, and for the celiac ganglion, I used a placement in the midline two centimeters inferior to the tip of the xiphoid process (the small piece of cartilage

extending downward from the bottom of the sternum), with the volunteer in the supine position (lying on her back). Because I had only two channels available to me, I took readings in two combinations: Fp2-Celiac Ganglion (Runs 1 and 2); and Celiac Ganglion-Heart (Runs 3 and 4). I did two runs for each combination, with an eyes open and an eyes closed reading for each run.

In each of these combinations, I took readings with eyes open for 10 seconds and with eyes closed for 10 seconds. The reference electrodes were on the earlobes and the ground electrode was on the right mastoid bone.

The data from these readings are:

Table 7.1. Amplitude Readings (μV) At Fp2, The Heart and The Celiac Ganglion

Run	Eye Condition	Delta	Theta	Alpha	Lobeta	Beta	Hibeta	Gamma
Fp2								
1	Open	36.45	11.96	6.21	4.23	4.41	4.68	1.59
2	Open	27.15	13.44	7.32	2.45	4.21	3.59	1.26
1	Closed	7.29	3.86	9.64	2.58	4.09	3.14	0.96
2	Closed	6.48	4.50	11.48	3.12	4.04	2.64	0.86
Celiac Ganglion								
1	Open	91.42	54.36	23.66	14.04	6.94	9.99	2.96
2	Open	92.71	50.15	16.94	8.24	5.06	13.47	2.07
3	Open	93.69	49.11	19.62	8.80	5.78	9.04	2.71
4	Open	89.99	49.47	18.56	7.86	5.78	14.66	3.57
1	Closed	87.44	52.71	12.14	7.33	4.65	17.86	1.96
2	Closed	89.98	48.94	24.23	19.12	8.94	11.06	7.38
3	Closed	91.35	46.85	14.37	9.40	5.81	17.63	5.05
4	Closed	87.13	53.32	18.64	9.02	6.00	7.57	2.65
Heart								
3	Open	65.73	41.45	16.44	15.43	7.07	7.66	1.70
4	Open	70.62	43.85	20.32	10.60	18.17	13.68	1.65
3	Closed	67.85	40.55	22.28	13.36	17.31	15.69	2.47
4	Closed	67.27	45.46	14.43	13.68	4.35	8.36	1.48

The data illustrate several points about EEG readings from standard chakra locations. First, looking at amplitude, the amplitude in microvolts (μ V) is greater over the solar plexus than over the heart, and greater over the heart than over the skull. At Fp2 the signal has to get through the skull to reach the electrode, and at the heart chakra it has to get through the sternum. This may be why

the amplitude is greatest at the solar plexus, but also the EM field may be somewhat stronger at the solar plexus.

Second, looking at blocking, there is no difference over the heart or solar plexus in the delta and theta frequency bands when one compares eyes open to eyes closed. However, there is at Fp2, where the amplitude is higher with eyes open in both delta and theta. Reversed delta blocking occurs at Fp2 and in the eyebeam (see Chapter 6) but not at the heart or solar plexus. Looking at alpha blocking, alpha goes up with eyes closed at Fp2 as expected. At the solar plexus, reversed alpha blocking was observed in Run 1, conventional alpha blocking in Run 2, reversed alpha blocking in Run 3, and no change in Run 4. At the heart, conventional alpha blocking was observed in Run 3 and reversed alpha blocking in Run 4.

The blocking data illustrate that the solar plexus and heart are electrophysiologically active locations. If one examines the lobeta-beta-hibeta bands, they are stable at Fp2 but much more variable over the heart and solar plexus depending

on whether the eyes are open or closed. Much more research is needed to establish norms for the general population and for people with various medical and psychiatric conditions. However, these data illustrate that: EEG readings can be taken over the chakra sites; they are physiologically active; they often vary with brain state (eyes open versus eyes closed), but not always in the same direction; and the amplitude is higher over the solar plexus and the heart (even though the heart signal must travel through the sternum to reach the electrode).

A group of researchers at the University of Sussex has demonstrated that using ultrahigh-impedance electrodes, the electrical field of the heart can be detected with the electrode one meter away from the body (Harland, Clark, & Prance, 2002; Harland, Clark, & Prance, 2002; Prance, Beardsmore-Rust, Aydin, Harland, & Prance, 2008; Prance, Debray, Clark, Prance, Nock, Harland, & Clippingdale, 2000). The brain electrical field is much weaker, therefore so far it has only been detected 2 millimeters away from the body. However, it is an established scientific fact that the human body EM field can be detected remotely. Given that this is an

established fact, it is scientifically possible that such signals can be detected remotely by another human being. The human body may be a more sensitive EM signal-processing system than our current electronic equipment. Proving or disproving the hypotheses in this book will require many experiments and the development of increasingly sensitive signal detection and amplification technology.

8
A WHOLE BODY ELECTROMAGNETIC SCANNER: SPECIFIC PREDICTIONS OF THE NEW SCIENCE

The Whole Body EM Scanner could be used to investigate all aspects of normal physiology, elite performance, disease and response to treatment. The scanner is similar to an MRI machine in that the person being scanned lies on a table and is scanned from above. Above the person is an array of electrodes that can pick up the body's EM field without direct skin contact. The scanner is housed in an EM-shielded room to reduce background noise. I applied for a patent for the Whole Body EM Scanner in 2008.

Two types of software can be used to analyze the EM signal received from the body. The information can be transformed into an anatomical image like an MRI scan, or, it can be displayed as a real-time motion picture of the fluctuating EM field. In this mode the Whole Body EM Scanner can track all

electrical activity in the body including nerve transmission, brain and chakra activity, chi meridians (assuming they exist and are electromagnetic in nature), and the body's reactions to EM input from the environment.

Chi meridians are the basis of many treatments in Chinese medicine including acupuncture. They are the channels along which the life force - chi - flows in the body. Disease arises from blockages and abnormalities in the flow of chi, which can be corrected by a variety of different treatment methods. The chi meridians do not correspond to any anatomical structures recognized by western medicine.

EM input from the environment could include geomagnetic fields, human energy fields from other people, the human eyebeam, therapeutic fields applied to the body, and an endless series of EM sources including pets, plants, crystals and electrical devices like computers, televisions and cell phones. These sources could have neutral, positive or harmful effects on the energy field of the person being scanned. The data gathered from such

studies could affect industrial safety standards and could lead to validation of numerous therapeutic interventions.

What follows is an illustrative list of some potential applications of the Whole Body EM Scanner.

Heart Attacks

A heart attack is an electrophysiological event. This was taught to me in first year medical school when I learned about the EKG signature of a recent severe heart attack. I then saw this pattern in the ER later in my training. The EKG pattern of a severe myocardial infarction is easy to recognize at a glance:

The EM pattern that goes along with every heartbeat is called the QRST complex. After a heart attack, the ST segment is raised. However, there are increasingly subtle EKG abnormalities with increasingly minor heart attacks, until the signal vanishes into the background noise (before it falls below the threshold of sensitivity of the EKG

machine). If the machine was made thousands of times more sensitive, in principle the level of resolution could get down to individual cells.

The question then becomes, how small a heart attack could be detected with an EM scanner that was more sensitive than a standard EKG machine, but not so expensive that the health care system could not afford it? Here the research applications of the Whole Body EM Scanner might diverge from the economically realistic clinical applications.

I propose that a heart attack is actually a whole-body event. There is a major electrical storm not just in the heart, but in the whole body. The distribution, amplitude and frequency of the EM field at different locations in the body can provide clinically relevant information about prognosis and treatment.

I also predict that the Whole Body EM Scanner can detect heart attacks long before they happen because it can detect subtle EM distress resulting from compromised blood flow to heart muscle cells. Additionally, I predict that abnormal EM field

transmission down the left arm can be detected long before the heart attack happens. I base this prediction on the fact that pain and discomfort radiating down the left arm are common symptoms of a myocardial infarct (MI), or heart attack.

Seizures And Migraine Headache

The same principle applies to seizures: I predict that they are whole-body events, not just EM storms in the brain. This must be true because there cannot be generalized convulsions without intense, chaotic EM activity in the peripheral nerves, in the neuromuscular junctions throughout the body, and in all the muscle cells in the body.

One use of the Whole Body EM Scanner would be to study the EM differences between different types of seizures. Generalized seizures result in loss of consciousness and full convulsions. Complex partial seizures result in a twilight state of consciousness with simple, repetitive actions like fumbling at a button. Absence seizures involve staring off into space with no abnormal movements. Jacksonian seizures can involve abnormal muscular movements

that travel up an arm, with no change in consciousness. Each of these types of seizure should have a distinct whole-body EM signature.

Seizures can be provoked by an external EM field - psychiatrists do this on purpose when they send electrical energy into the brain during ECT (electroconvulsive therapy). In industry, if a person's brain was exposed to this much electricity, the event would be classified as an accident, and damage would be expected. There would be legal and financial consequences, and government regulators would investigate and try to prevent future accidents of that type.

Just as heart attacks can be ever smaller and more minor, so, in principle, could seizures become smaller and smaller. A very small absence seizure might look the same as normal self-absorption to an outside observer, but it should have a distinct EM signature. The EM scanner could investigate the continuum from a full generalized seizure down to normal transient muscle twitches, called fasciculation in medicine. It is odd to watch a small area of your arm or thigh twitching – this is

basically a small localized seizure. It probably originates in the muscle cells in that area, but in principle some fasciculation could be caused by very small brain seizures (mini-Jacksonian seizures).

In neurology, seizures are always assumed to begin in the brain, but this is not necessarily so: some brain EM storms could originate outside the brain just as they do when psychiatrists administer ECT. One place outside the brain that some seizures could originate is elsewhere in the body. It follows that in some people with epilepsy, the abnormal epileptic focus – the abnormal tissue where the seizure begins – could be in the body. The Whole Body EM Scanner could detect this focus and treatment could be directed towards it.

One reason that the epileptic focus could be outside the brain in some cases of epilepsy is the fact that the resting EEG is normal in 90% of cases – perhaps the Whole Body EM Scan is abnormal in a subset of cases, with the focus outside the brain. We know there is continuous two-way EM traffic between the body and the brain all the time: without it, we

could not feel anything or move. If sensory EM traffic can move from body to brain, why can't seizure traffic?

If we forget the destructive nature of ECT for a moment, it also follows that ECT does not always have to be administered to the brain. There could be a psychiatric focus (a term I just invented) in the body in some cases of depression. This is a general postulate of the theory of human energy fields: the cause of a psychiatric disorder does not have to be in the brain. This is accepted and recognized already in the form of depression caused by low levels of thyroid hormone, and other examples of psychiatric disorders caused by specific, identified medical diseases.

Some cases of migraine headache could be electromagnetically related to epilepsy. A migraine headache must also have a whole-body EM signature, and the cause of the headache does not have to be in the head. For instance, there is a form of migraine called abdominal migraine in which there are no head symptoms at all, only the

gastrointestinal symptoms. At the EM level, this is due to a “seizure” or EM storm in the abdomen.

In one case, a migraine headache could start in the abdomen and never leave that part of the body. In a second case, it could start in the head and never leave the head. In a third it could start in the abdomen and generalize to the head, and in a fourth it could start in the head and generalize to the abdomen. Each of these clinical patterns should have a different EM sequence and they might have different treatments.

If we think of migraine as a type of seizure disorder, and if we know that seizures can be induced by external EM fields, then it follows that some forms of migraine could be triggered by external EM fields. Some forms of migraine might cluster with solar storms and flares, EM fluctuations in the ionosphere, human-generated EM fields, fluctuations in natural geomagnetic fields, and other EM events outside the body. Some forms of migraine might be treatable with EM fields or EM shielding. Improvements in migraine that occur when a person moves to a new location might be

due, at times, to the EM environment, not the weather, climate, humidity, pollutants or allergens in the air (all of which reduce to EM activity in any case, since everything in nature reduces to physics).

I predict that some forms of migraine can be treated with inexpensive EM helmets. I also predict that some forms of epilepsy can be treated with meditation and psychotherapy. I make this prediction because of my experience in treating abnormal absorption states with psychotherapy, in people with dissociative disorders. There must be an EM gray zone between psychological absence originating in the mind and treatable with psychotherapy, and epileptic absence originating in the brain and treatable with medication. The research question is: how far can psychotherapy penetrate into the brain component of the brain-mind field?

Cancer

There are numerous types and causes of cancer. There is always an interaction between the organism and the environment in diseases,

including cancer, the common cold, sports injuries, AIDS, and cystic fibrosis. Cystic fibrosis is a genetic disease, but the course of the illness is profoundly affected by input from the environment in the form of chest physiotherapy, antibiotics and enzyme replacement. Different people with the same cystic fibrosis genetic defect have very different outcomes.

Some cancers have a major genetic component, and some do not. In all cancers, however, the condition of the organism and input from the environment can affect the outcome. One person's immune system works better, another person doesn't quit smoking, and a third person inhales too many asbestos fibers.

Because biology reduces to chemistry and chemistry reduces to physics, all cancer is fundamentally an electromagnetic problem. Therefore cancer must have an EM signature detectable with a Whole Body EM Scanner. The main question is how sensitive the scanner can become and how small a cancer it can detect: in principle, cancer could be detected at the level of a microdot. This all depends on the ability of the technology to separate out a

tiny cancer EM signal from the background noise generated by the rest of the body.

The scanner could be used to track treatment response, to subtype different cancers, to detect metastases, and to target delivery of treatment to a precise location. The treatments that could be studied within the science of human energy fields include mainstream western medical interventions, and also alternative and eastern treatment methods including therapeutic touch and the laying on of hands.

Chronic Fatigue Syndrome

Chronic fatigue syndrome is controversial. Many physicians do not consider it to be a valid, distinct syndrome. Many doctors think that chronic fatigue is better understood as due to other conditions like depression, autoimmune disorders, chronic viral infections and so on. From my perspective, it doesn't matter whether the chronic fatigue is caused by chronic fatigue syndrome, so to speak, or by some other disorder. Either way, the person is

profoundly, chronically tired and likely has chronic fibromyalgia, depressed mood and other symptoms.

I predict that chronic fatigue is an EM disturbance of the entire body. It can't be psychiatric in the sense of "being in your head" because the EM abnormality can be detected throughout the body. It is possible that different causes of chronic fatigue have different EM signatures: the Gulf War vet might have a different scan from the civilian who got the flu and then developed chronic fatigue. This in turn might lead to differentiated treatments.

Parkinson's Disease

Parkinson's disease is well understood in one sense. It is caused by a deficit of the neurotransmitter dopamine in a specific part of the brainstem called the substantia nigra. The available treatments involve replacing the missing dopamine with medication, though in the future the standard treatment could become injection of stem cells directly into the brain. I predict a reduction in brain EM activity in the substantia nigra in Parkinson's disease. This finding will illustrate the general

principle that any deficit at the biological or chemical level is automatically an EM deficit, while any abnormal increase in biological activity is automatically an EM increase.

Parkinson's disease will also illustrate the general principle that many organ diseases are simultaneously whole body diseases. Although the original abnormality in Parkinson's disease is in the brain, the EM disease state is in the whole body. The idea that a disease affects "the whole person" will become a literal fact in physics in this new medicine. Medicine will become "holistic" because the empirically demonstrated physics of human energy fields will allow no other approach. An effective treatment for Parkinson's disease will have to correct the EM abnormality in the whole body.

Phantom Limb

Phantom limb is the inverse of the limb agnosia described by the neurologist Oliver Sacks in his book, A Leg To Stand On. Oliver Sachs experienced a temporary paralysis of his leg when he had a hiking accident in Scandinavia. The paralysis was

due entirely to an injury to a nerve in his leg – there was no injury to his brain. During the period of time his leg was paralyzed, he lost all sense that it was part of him. The paralyzed leg looked to him like it was not part of himself or his body. He did not own it.

Sachs then mentally reviewed many cases he had seen as a neurologist in which patients exhibited the same mental loss of a limb. He realized that this was part of the neurology, not just an "idiosyncratic reaction." He realized that, in my vocabulary, the central program of his leg had been deactivated by the loss of peripheral input from the leg.

Most importantly, from a treatment perspective, Sachs' physical recovery took a quantum leap when a therapist pushed him in a pool and forced him to flounder in the water against his will. Suddenly, his leg was back. His recovery took a quantum leap at the same time. The general neurological principle is that peripheral input is required to keep central programs up and running. In limb agnosia, the program is turned off abnormally: the limb is present but the central program is shut down.

Phantom limb is the inverse condition. In phantom limb, the person experiences sensation, often pain, in his left foot after his left leg has been amputated above the knee. The limb is missing but the central program is active. Treatment should be directed at shutting down the central program, which is likely being kept up and running by nerve signals from the end of the stump.

I predict that in phantom limb there is an EM shadow of the missing lower leg that extends out into space beyond the stump. When the phantom limb pain is treated successfully, the shadow disappears. The shutting down of the central program of a limb in the brain can also be detected by the Whole Body EM Scanner.

Phantom limb, I believe, could be an unsuccessful attempt by a human being to regenerate a limb the way a salamander does. The fundamental controls on the process of limb regeneration are at the EM level, and the process involves generating an EM shadow as the blueprint for the reconstruction, I predict. The ultimate goal of this line of study is to learn how to stimulate limb regeneration in humans

using EM fields. This should be an attainable goal within one hundred years or less.

Acupuncture

When I was in medical school, from 1977 to 1981, acupuncture was universally regarded as quackery. Now it is treated with much more respect, but its mechanisms of action are completely unknown to western medicine. Theories to explain acupuncture involve the placebo effect or stimulation of chemical or hormonal reactions of some kind.

According to the science of human energy fields, the chi energy affected by acupuncture is actually the electromagnetic field of the body. This field can be mapped in real time by the Whole Body EM Scanner and the effects of different needles at different locations can be mapped scientifically. The difference between regular and electro-acupuncture can be studied in a similar fashion.

Human Eyebeam Interaction With The Body

The human eyebeam interacts with the physics of the outside world, as does the human aura in general. This is a two-way communication channel that developed within the earth's geomagnetic field over hundreds of millions of years of evolution. To me, it is implausible that this communication channel was never selected for and never conferred any survival advantage in human beings and other mammals. It clearly has done so in certain amoeba, reptiles, fish and amphibians.

If a person lies in the Whole Body EM Scanner then the interplay of another person's eyebeam with his body EM field can be captured by the equipment. It then becomes possible to study individuals who are good at guessing when they are being stared at. The question is whether the greater sensitivity to the eyebeam is housed in the person's skin, brain, or both. Skill at sensing the human eyebeam should improve with practice and decline with fatigue. An EM gun that simulates the human eyebeam could be used to study threshold effects in the person trying to sense the eyebeam, and varying levels of background noise could be introduced into the experiments.

Such training would have military applications: for instance, snipers try not to stare directly at their targets for too long because some targets appear to sense the surveillance and then take evasive action. If this is real, it must be a general interaction between hunter and quarry that occurs in nature. The quarry could potentially be trained to be more sensitive, or could carry a detector on the battlefield.

Sex

Sex is fundamentally an electromagnetic event. All its EM aspects can be studied within the science of human energy fields. A Whole Body EM Scanner with a table and electrode array big enough for two people could be used to study the energy interactions during sexual activity, which would fill both bodies and the space between and around them. When John Donne wrote poetry about two lovers on a bed creating their own separate world, he was describing an objectively real EM envelope that could not be measured in his century.

Additionally, smaller detectors could be used to study the EM field between two lovers. It should have much greater amplitude than the EM field between two strangers who are not sexually attracted to each other. In this line of research, one could study the difference between intense sexual and intense platonic bonding, such as that between mother and child. Christians might say that the EM field between Mary and Jesus was more intense than average, as is the EM field around saints.

How “connected” two people are is literally a matter of physics. Inversely, so is how disconnected two people are, two tribes, two cultures, or two species. People who are disconnected from others tend to be disconnected from themselves, and from nature. All of this can be studied within the science of human energy fields. People in love should have an increased synchronization of their energy fields, and this should further increase to a maximum during mutual orgasm.

The energy signature of mutual orgasm should be distinctly different from that achieved by solitary masturbation. The arousal pattern in the whole

body field should be distinctly different when heterosexual and homosexual men are shown pictures of men and women. A potential forensic application of the Whole Body EM Scanner would be studying the arousal patterns of pedophiles.

Conversion Disorders

Conversion disorders are psychiatric symptoms that mimic medical problems but have psychological causes. For instance, a person experiences intense conflict about an urge to punch her boss: suddenly, her right arm becomes paralyzed. Skeptics see this as “attention seeking,” “all in the person’s head,” “malingering,” “role playing” or something similar.

I predict that there is a measurable change in the EM traffic between the arm and the brain in a conversion disorder. People with conversion disorders were described by the nineteenth century French psychiatrist, Pierre Janet, as suffering from la belle indifference (beautiful indifference). The limb was paralyzed but they did not seem to notice and were not concerned about it. I predict that the central program of the limb is shut down in a

conversion disorder, just as it was for a while in Oliver Sachs. Conversely, in conversion pain, the person feels pain when there is nothing physically wrong. In this case, the central pain program is on when it should be off.

People with actual physical paralysis, as described by Janet, did not exhibit la belle indifference: their central programs were up and running (only some paralysis victims have limb agnosia, for unknown reasons). The Whole Body EM Scanner should therefore be able to tell the difference between a conversion disorder and an actual physical disorder.

Mania and Depression

From my experience as a psychiatrist, I am absolutely convinced that depression and mania are distinct EM states of the whole body. A person with bipolar mood disorder is very different when in the manic state. The manic person is full of life, energy, enthusiasm and exuberance. There are jokes, rhymes, quips, grandiose schemes, and hyper-sexuality.

Speech is rapid and the person is expansive, excited, animated and infectiously amusing (for a while, until the mania becomes grating and intolerable to another person because it is so relentless and extreme). The manic person can be full of energy for days on very little sleep.

A manic person seems to be beaming with energy. I propose that this is literally true, and measurable. Conversely, in the depressed state, the same person is tired, humorless, slowed down physically, and seems to radiate very little energy. Even the complexion changes from mania to depression. It seems that the capillaries under the skin are wide open in mania, while the person looks sallow and unhealthy in the depressed state.

Bipolar mood disorder cannot be a “brain disease,” in the manner proposed by contemporary biological psychiatry, because it affects the whole body. The problem with biological psychiatry in its current form is that most of the problems it studies are actually EM problems. We should have electromagnetic psychiatry, not biological psychiatry. The controls, the abnormalities and,

ultimately, the effective treatments are at the EM level. Contemporary electroconvulsive therapy (ECT) is a primitive attempt at electromagnetic psychiatry. It is damaging to the brain and the mind. This damage can be readily demonstrated by the Whole Body EM Scanner. It is currently well documented in the EEG literature on ECT.

Extreme anger should have a distinct EM signature and should be housed primarily in the abdomen. Many people with depression should exhibit an EM shunting of energy from the rest of the body to their repressed anger in the abdomen. Psychotherapeutic mobilization of this anger should have an antidepressant effect clinically, and should reverse the literal depression (in terms of amplitude and frequency) of the EM field in the rest of the body including the brain. Techniques for doing this are described in my clinical books.

Depression, then, has certain similarities to abdominal migraine. It is likely not a coincidence that medications for both migraine and depression interact with the serotonin system. In some cases of migraine and depression, the therapeutic effect may

be in the abdomen, not the brain. These subsets of cases should have distinct EM patterns from cases that originate primarily in the brain.

Schizophrenia

Schizophrenia is also a whole body disease. I predict that the EM field of the solar plexus is highly abnormal in severe negative-symptom schizophrenia. Symptoms of schizophrenia can be divided into positive and negative symptoms: positive symptoms are things that people with schizophrenia have, that normal people do not have. They include hallucinations, delusions, disorganized thinking and disturbed behavior. The negative symptoms are things that normal people do have, but which are missing in schizophrenia. They include emptiness, withdrawal, apathy and other deficit symptoms. Schizophrenia was called dementia praecox, which means early onset dementia, up till the early years of the twentieth century, because of these negative symptoms. The negative symptoms are reminiscent of the emptiness, or absence of the real person, in dementia.

The energy field of a person with severe negative-symptom schizophrenia should be depleted. Unlike in depression, there is no dissociated ball of anger in the abdomen – instead, there is just emptiness. This corresponds to the soul loss diagnosed by ancient shamans.

The energy field between a heterosexual male with severe schizophrenia and an attractive female one foot away will be weak in amplitude, and low in fluctuations, and will lack any significant degree of synchronization between the man and the woman, compared to that of a healthy normal male. This field deficit can be measured by the Whole Body EM Scanner or a portable device placed between the two people. The interactional EM field between Romeo and Juliet would be at the opposite extreme.

Related deficits in the interactional energy field might be observed in marriages where one partner is highly narcissistic. Men who stalk and batter their partners should have disturbed interactional energy fields.

In schizophrenia, antipsychotic medications help some people's positive symptoms, but they have negligible effect on negative symptoms. This should be reflected in the absence of improvement in the body EM field of the person whose positive symptoms respond to medication.

LSD

If the visual display involves different colors for different frequencies, the scan of a person high on LSD might look like LSD art or sixties light shows. This profile might be distinctly different from that of psychosis or from the effects of other classes of street and prescription drugs, and therefore the scanner could be used for diagnostic assessment. Hallucinogens will also heighten the sensitivity of the body to geophysical EM input – peyote and other natural hallucinogens might be superior to designer hallucinogens in this regard. In this line of research, medicine, pharmacology and anthropology could cross-fertilize each other.

SSRI Antidepressants

If an electrical signal travels down neuron A, it reaches the end of the neuron and causes neurotransmitter to be released into the space between neuron A and the next neuron, neuron B. The space between the two neurons is called the synapse. The neurotransmitter diffuses across the synapse, attaches to receptors on neuron B and causes neuron B to fire electrically. Neuron B then releases neurotransmitter into the space between itself and neuron C, and so on, ad infinitum. This is how brain cells communicate with each other.

Neuron A is the presynaptic terminal and neuron B is the postsynaptic terminal. At the neurotransmitter level, selective serotonin reuptake inhibitors all have the same mechanism of action. They occupy the pre-synaptic receptors to which serotonin attaches in order to be reabsorbed into the presynaptic neuron. This is how the synapse is cleared of neurotransmitter in preparation for the next firing of neuron A (additional mechanisms also help with the clearing out process). The SSRI antidepressants occupy and block the presynaptic reuptake receptors, resulting in serotonin staying in

the synapse longer and having a better chance to cause neuron B to fire.

It is scientifically certain that this is what SSRI's do in the brain. The theory that depression involves low levels of serotonin is derived from this mechanism of action of SSRI antidepressants, however, there is abundant evidence that serotonin levels are normal in depression, therefore the clinical cause of the depression cannot be low synaptic serotonin levels. Boosting the serotonin system must affect other systems in a series of one, two, five or ten steps, one of which involves the biological abnormality in depression. There are probably numerous different types of depression biologically.

For a variety of reasons, I predict that SSRI antidepressants increase the dissociation between different components of the mind-brain field, and also increase the dissociation between the brain and the body. They don't cure anything, rather they wall off the problem so that it cannot intrude and cause depression. This prediction can be tested in the Whole Body EM Scanner.

For instance, I propose that a subset of depressions involves a dissociated ball of anger in the abdomen. If such a depression responds to an SSRI antidepressant, the ball of anger will persist but EM traffic between the abdomen and brain will be reduced (the dissociation between the brain and the anger will be increased). If a person with a childhood sexual abuse history and numerous psychosomatic symptoms responds to an SSRI, similarly, the EM traffic between the body and the brain is reduced so that the symptoms cannot intrude into cortical consciousness. Similarly, a common side effect of SSRI antidepressants is loss of sex drive: this involves a disconnection or dissociation between the brain field and the genital EM field. In the vocabulary of the branch of yoga called kundalini yoga, the kundalini energy cannot ascend from the root chakra to the crown chakra.

A general principle in the theory of human energy fields is the prediction that psychiatric medications have their clinical effect on mental state by acting on both the brain and the body. This can also be true in non-psychiatric problems like epilepsy and migraine. These latter are classified as

“neurological” disorders, rather than psychiatric disorders, only because of artificial distinctions made by physicians, not because they truly belong in separate categories. The general principle applies to any medical or psychiatric conditions in which there is a significant change in mental state at the core of the condition: if the drug helps, it likely acts on both brain and body, and it may increase the dissociation between brain and body.

Obsessive Compulsive Disorder

Obsessive compulsive disorder (OCD) involves the intrusion of unwanted thoughts and compulsions into consciousness. The thoughts are experienced as ego alien. They arise outside the self, intrude into it, are unwanted, and are resisted. Resistance causes increasing anxiety, however, which can be relieved only by carrying out the compulsion, whether it be to check locks, wash your hands, or count objects.

OCD, by definition, must involve a structural dissociation of the psyche, no matter what its causes. There has to be a dissociated sector of the psyche that creates the obsessions and compulsions

and from which they intrude into the self, otherwise they could not be ego alien. In conventional psychiatry, the psychiatrist never asks where the obsessions and compulsions come from, and he never tries to talk or reason with them, just as he does not talk to the voices of the person with schizophrenia.

Within my Trauma Model Therapy, however, talking to the voices is a core treatment technique. The voices are disavowed, disowned, dissociated aspects of the self. They are your own feelings talking to you out loud inside your head, or projected outside your head. Successful treatment involves owning and integrating them, not suppressing them with medication. Similar logic applies in OCD. The impulses have a context, a history, and a meaning and need to be engaged in the therapy process, not suppressed.

Contemporary drug and behavioral treatments suppress the voices in psychosis and the obsessions and compulsions in OCD. If this is not possible, the person is taught to ignore them. Response rates to this kind of treatment are poor. I predict that

suppressive treatments increase the dissociation or disconnection between the sector(s) of the psyche from which the voices, obsessions and compulsions arise. The suppression process should have the opposite EM signature from therapies aimed at reconciliation and integration.

The Moment of Death and Astral Projection

The moment of death is an electromagnetic event. The light of the body goes out and the soul departs. Whether the soul continues to exist as an organized, coherent, distinct entity after departure from the body, or simply diffuses out into the space-time field, is a problem in physics from the perspective of the new science. If the soul survives after bodily death, it must have an EM signature and there must be a way to detect it. This is another example of the unification of science and religion within the science of human energy fields. Questions in religion are simultaneously questions in physics because spirit is a general property of matter.

In principle a terminally ill person could consent to die under a Whole Body EM Scanner, or relatives could give such consent for a person who was brain dead prior to removal of life support. It would then become possible to study the moment of death electrophysiologically. More limited studies could be done with the Chakra Detection System or a simpler hand-held device, and studies could be done on lab animals that are being sacrificed as part of other research projects.

Any such studies would have to be scrutinized by Ethics Committees overseeing the researchers. There would have to be real informed consent and decisions about life support, palliative care and aggressive life-saving measures would have to be made by physicians not involved in the research. Some people might find such research morally objectionable no matter what ethical safeguards were in place. An alternative would be to obtain consent from animal owners who are having their pets put to sleep by veterinarians; the euthanasia could then be done under a Whole Body EM Scanner.

If the soul does survive bodily death as an organized, sentient entity, then it should be possible for the soul to temporarily disconnect from the body under the EM scanner. This could be done by individuals who practice remote viewing and astral projection (different terms for the same thing). Alternatively, a hand-held scanner could be used to study people undergoing life-threatening surgery or cardiac resuscitation – some people in these high-risk populations would later report out-of-body or near-death experiences.

Depersonalization disorder might involve a more subtle version of astral projection, which is in turn a more subtle, reversible form of death. It might be that the energy field of a person with depersonalization disorder exhibits a measurable disconnection of part of the mind-body field from the main body EM field. People with depersonalization disorder often describe feeling as if they are outside their bodies; their bodies feel unreal to them, possibly because of a block in EM energy flow from their conscious minds to their chakras and other body centers.

Meditation, Prayer, Physical Fitness and Obesity

Meditation, prayer and other related psychophysiological states could be studied in the Whole Body EM Scanner. Just as disease is often a whole body condition, so too are physical fitness and special, healthy states of consciousness. I am certain from personal experience that a five-mile run cleanses the body, readjusts the whole body EM field, and intensifies the degree of synchrony between the body EM field and the earth EM field. In the new science, these subjective impressions become testable scientific predictions.

Obesity, I predict, is also a whole body EM condition, not just a problem of excess adipose tissue: it is the inverse of fitness. Gaining 50 pounds results in an adjustment of the whole body EM field. It may provide an illusion of protection from psychological harm in some trauma survivors by insulating the heart and abdominal chakras from environmental EM input. There may be a defensive psychological component to the drive to obesity that can be studied in the Whole Body EM Scanner.

The drive to obesity and the drive to disconnection from the geomagnetic field of the earth may be related forms of withdrawal and isolation from the world. Obesity, dissociation of head from body, and disconnection from the earth's magnetic field might correlate with each other.

Summary

The above are examples of possible uses of the Whole Body EM Scanner. Many other applications are also possible. The examples given illustrate the general principles and logic of this aspect of the new science. It should be possible to develop a Whole Body EM Scanner that could be used outside the EM-insulated room. Such a machine could potentially scan the whole body EM field remotely. In addition, my patent application includes versions of the scanner including a helmet, a body suit and a hand-held device, all of which could have different uses.

Consider cell phones and geo-positioning equipment, for instance. The original work of Alexander Graham Bell has lead to cell phone

signals being relayed by satellite. If cell phone signals can be picked up by satellites, and if your car's tracking equipment can tell you where you are and how to get to your destination, then it is possible that an EM scanner in outer space could detect the EM signature of an individual person on earth.

The satellite version of the Whole Body EM Scanner could be used to track criminals, terrorists, missing children, lost hikers and anyone who needed to be located by forces friendly or hostile. At the local police level, the scanner could, in principle, be mounted on the underside of a helicopter. The only things preventing such applications of the new science are electrical engineering problems with signal noise and attenuation, and detector sensitivity. Additionally, for these applications of the Whole Body EM Scanner to be possible, it must be true that people have EM signatures as distinct as their DNA and retinal, voice and fingerprint patterns.

The EM signature of an individual person may be generated by his DNA, and fetal development may

involve an EM blueprint generated by the fertilized egg. That is, the controls on fetal growth may be electromagnetic. Fetal development, then, may be an extreme version of limb regeneration by salamanders. When this process goes awry, it can lead to dermoid cysts of the ovary, leukemia or lymphoma, all of which involve loss of normal control over cell differentiation. Dermoid cysts contain a disorganized tangle of skin tissue, hair and teeth created when an unfertilized cell in the ovary, one might say, gets out of control and tries to become a fetus.

When a salamander regenerates a limb, cells in the stump de-differentiate back to primitive stem cells under the influence of the phantom EM field, then differentiate forward into a normal limb. This is a smaller version of a fertilized egg unfolding into an entire human body. Salamander limb regeneration and normal fetal development, I believe, are organized EM versions of dermoid cyst formation.

9
ENERGY FIELD THERAPIES

All forms of “energy medicine” can be studied within the science of human energy fields. The EM field generated by a healer’s hands should have different EM properties from the hands of a non-healer, and the interaction of the hand field of the healer with the body field of the patient can be filmed by the Whole Body EM Scanner, which is basically an EM video camera.

As mentioned in Chapter 3 , the Whole Body EM Scanner is a two-edged sword for believers in healing touch and energy medicine: it will demonstrate that some healers are actually doing something; and it will also demonstrate that some are doing nothing. An out for the latter group will be the claim that the energy they are treating is too subtle for the Scanner to detect. In some cases this claim will be correct, and in some it will be mistaken. A final conclusion will await the

development of more advanced theory and more advanced instrumentation.

The following energy field therapies illustrate a range of applications of the Whole Body EM Scanner within the science of human energy fields.

Reading the Human Aura

The human aura is an energy field that extends outside the body. Like the human eyebeam, it is a "paranormal phenomenon," lying outside science and involving a scientifically unknown force of some kind – until one proposes that the human aura is the body's electromagnetic field extending out into space. Then studying the human aura, for instance in a Whole Body EM Scanner, becomes just as scientific as taking an EKG or EEG.

The human aura exists and it extends beyond the skin. The aura interacts with the physics of the outside world, as proven by the Human Eyebeam Detection System. The unanswered question is whether the interaction of the human aura with the

outside world has any biological, psychological, spiritual or other significance. I believe that the human EM field inside and outside the body participates in many meaningful interactions with the biosphere and the earth's geomagnetic field. The science of human energy fields transforms this belief into a set of specific, testable scientific hypotheses.

If some people can actually see auras, then the aura color they perceive should have a consistent relationship with the amplitude, frequency or other properties of the aura, which is the external EM field of the body. Not believing in the human aura – the position adopted by skeptics – is like not believing in the EKG. Once the aura and the EM field of the body become the same thing, skepticism vanishes and scientific study can begin.

If aura readers are not merely subjective or random, then there must be some consistent pattern to their vision. The simplest relationship would be a 1:1 correlation between the color perceived by the reader and the dominant frequency of the target

person’s aura. The approximate wavelengths of visible light in nanometers are:

- violet 380-450
- blue 450-495
- green 495-570
- yellow 570-590
- orange 590-620
- red 620-750

Since frequency is the inverse of wavelength, red light has the lowest frequency and violet has the highest. EM radiation with a frequency just lower than red is called infrared; radiation with a frequency just above that of violet is called ultraviolet (UV), which is the component of the spectrum that causes sunburn.

Aura readers should not be able to see components of the aura outside the visible portion of the spectrum. However, it is possible that they do so through some unknown “intuitive” mechanism, therefore correlations between color perceptions and wavelengths outside the visible spectrum should be investigated, within reasonable limits.

An angry person could generate a black and red aura, for instance. This could be studied by having a person behind a screen with his aura extending out both sides. The aura reader would read the aura extending out beyond each edge of the screen, without being able to see the person. There is a contradiction here, however: scientifically, “black” means an absence of light, therefore it should be impossible to see a black aura. But “black” as perceived by an aura reader may correlate with some consistent property of the EM field nevertheless.

Just because an aura reader sees a colored aura does not necessarily mean that his eyes are reading the aura. For instance, the target person’s aura could be received by the celiac ganglion (solar

plexus chakra), transduced into a nerve signal, transmitted to the brain, and processed in the visual cortex to generate a color sensation. With all these steps in the process, the frequency of the aura could be uncoupled from the frequency of color seen by the reader. In this scenario, the aura reader could be tested on whether there is or is not a person behind the screen. It could be possible to detect an aura reliably but with the color seen being random.

More specific studies could involve an aura reader detecting disease states by looking at the aura. In such studies the reader would not know the diagnosis. The question would then be whether the aura reader could perform as well as the Whole Body EM Scanner. At a practical level, physicians will use on the scanner for diagnosis because it will prove to be more reliable and accurate, and more readily available than an aura reader on call.

Therapeutic Touch

Therapeutic touch involves two components: sensing the target person's energy field; and affecting it by transmitting energy into the person.

Practitioners of therapeutic touch, then, are aura readers who use their hands as the scanning equipment, rather than their eyes. If therapeutic touch is real, then the energy involved must be electromagnetic and therapeutic touch must be no more mystical than radiation oncology.

Radiation oncology involves beaming toxic EM energy such as gamma rays at a person's body. Just as in chemotherapy, the radiation damages the cancer cells more than the rest of the person because the cancer cells are dividing more frequently. This makes their DNA, enzymes and chemical processes more susceptible to damage by radiation or drugs, since they are more active. The reason that chemotherapy and radiation cause hair loss is because hair cells are dividing more frequently than most other cells in the body.

We know for a scientific fact, then, that invisible EM radiation can have profound toxic effects on the human body. Prior to a bone marrow transplant, for instance, a person's entire immune system is destroyed by whole body irradiation. There are also amplitudes and frequencies of EM radiation that

promote health and healing. An example is placing fractured bones in EM fields to promote healing in cases where there has been non-union of the broken bones.

The interaction of the healer's hands with the energy field of the target person can be studied in the Whole Body EM Scanner, and the effects can be tracked to determine whether they have any meaningful, lasting affect on the EM status of the person. An immediate effect might or might not lead to lasting functional change. This is equally true for medications or any other form of treatment.

Energy Rebalancing

Many forms of energy medicine involve rebalancing the person's chakras, chi meridians or other energy systems, as explained in previous Chapters. Some of these claims could be true and some false. Once electromagnetic definitions of "balanced" and "unbalanced" are agreed upon, all rebalancing therapies can be tested in the Whole Body EM Scanner. Most likely, "balanced" and "unbalanced"

would be opposite ends of a continuum, with no specific cutoff in the middle.

Acupuncture

When I was in medical school (University of Alberta, 1977-1981), acupuncture was regarded as ineffective and unscientific. No doctor at the medical school would ever refer a patient for acupuncture, or if he did, he would keep it very quiet. Since then considerable evidence has accumulated that acupuncture has an effect and is more than just a placebo. A barrier to the acceptance of acupuncture by western medicine, however, has been its “unscientific” theoretical foundation – chi meridians and chi energy.

This barrier dissolves when dualism and reductionism are rejected, when spirit becomes a general property of matter, and when the chi energy and the body’s EM field become the same thing. The movement of electromagnetic energy along tissue planes and other pathways in the body can be demonstrated in the Whole Body EM Scanner. There will be extensive EM traffic outside

the nervous system, I predict, and it will be guided by fascial planes and other structures currently thought to have only mechanical or anatomical functions.

The mapping of chi meridians and specific acupuncture points seems to have been done thousands of years ago, and there seems to be a disconnection between current maps and practice, and the original knowledge that lead to the maps. Given the many generations involved, there has likely been some drift in the system, with some degree of noise and error being introduced over the centuries. Therefore I predict that not all chi theory is correct at the level of details, while the theory in general is valid and testable.

If acupuncture can be shown to affect EM transmission in the body in a consistent, replicable fashion, then countless other variables can be introduced into experiments. For instance, what is the effect of antidepressant medications on EM flow, and what is the interaction between antidepressants and acupuncture? Perhaps antidepressants damage and impair EM flow, and

partially block the therapeutic effect of acupuncture. Conversely, perhaps acupuncture can partially reverse the EM side effects of antidepressants.

Is acupuncture more or less effective than massage based on chi theory? Does participation in tai chi enhance the response to acupuncture? Does acupuncture work less well within the EM cloud of a city than in a remote area whose EM signature is closer to that of ancient China? In other words, is part of western skepticism about acupuncture due to the blocking of its effects by the western, urban EM field? It follows from this line of thinking that acupuncture might work better in an EM-insulated room.

Massage

Massage feels very good. It must therefore readjust the body's EM field. Questions to be answered in the Whole Body EM Scanner include: how long does the effect last; can massage affect disease states; can massage affect other body systems besides the musculoskeletal system; and does massage affect

the human aura? If massage does improve the health of the human aura, then how does this affect the interaction of the individual's aura with rocks, trees and other people?

Chiropractors and Related Healers

One reason chiropractors have trouble getting accepted by western medicine is their claim that spinal manipulation can have a therapeutic effect on diseases like diabetes. There is no known pathway or mechanism in western medicine that makes such an effect possible. Chiropractors therefore have the same problem as acupuncturists – their theory lies outside western science. As for acupuncture, any real effects of chiropractic manipulation on other body systems could be studied in the Whole Body EM Scanner.

In general, the musculoskeletal system is involved in the whole body EM field in an intricate fashion. It is much more than a mechanical support and movement structure. The science of human energy fields has the potential to integrate chiropractic medicine and mainstream western medicine, by

providing EM mechanisms for the effects of spinal adjustment on the rest of the body, and by providing tools for measurement.

Yoga

Yoga provides another rich field of study under the Whole Body EM Scanner. Especially interesting will be the EM differences between different forms and branches of yoga. I am particularly interested in Kundalini Yoga because it includes the chakras and the energy flow from the base chakra to the crown chakra, which is a particularly fertile area of study within the science of human energy fields.

Marathon Training

I mention marathon training mainly because I ran a 3:17 marathon in 1981 and hope to complete another marathon in the future. I know from personal experience that long distance training causes a profound reorganization, consolidation, and integration of the whole body EM field. It also stimulates integration of the body EM field into the

earth's geomagnetic field. The "subjective," experiential foundation of this prediction is described in my poem, "The Snow Runner," in my collection of poems entitled, Adeocarcinoma and Other Poems.

Meditation

Meditation is another practice that must, I believe, have a profound impact on the body EM field. Advanced meditators will be especially useful in experiments because they can control their entry into and out of distinct physiological states, which must also be distinct EM states, since biology reduces to chemistry, and chemistry reduces to physics. For instance, an advanced yogi can slow his heart rate by 30 beats per minute, at will. This slowing of the heart rate is an EM event within the sinoatrial node of the heart.

A good hypnotic subject can perform like an advanced yogi, but to a lesser degree. For instance, highly hypnotizable individuals can create a 5 degree Celsius difference in temperature between their hands by imagining that one is immersed in a

bucket of ice water. Similarly, a highly hypnotizable individual can hallucinate a barrier between himself and a light source, resulting in a measurable reduction in the visual signal sent through his brain's visual system.

Summary

Yoga, massage, athletic fitness, meditation, acupuncture and hypnosis can all be examined for their similarities and differences within the science of human energy fields. The examples in this chapter illustrate the logic and scope of this range of applications, but there are many more that require exploration. All of these experiments demonstrate the self-organizing property of the human EM field, and the interaction of consciousness with the material world: on command, the field can change its properties in a defined, replicable fashion. The only input required to generate the change is a simple audio signal ("go" or "now"), and the same signal can generate countless different states depending on the prior arrangements and the choices made by the individual being scanned.

Acupuncture is of particular interest within the science of human energy fields because it is based on an EM theory, although its vocabulary is "spiritual." Study of acupuncture can potentially demonstrate that ancient forms of energy medicine were based on objective reality, but lacked the scientific theory and instrumentation of the twenty-first century. Such findings would further close the gap between the subjective and the objective in western philosophy and science.

One goal of the science of human energy fields is to develop instrumentation; a second is to develop therapeutics; and a third is to transform many "subjective" beliefs into objective facts previously disallowed by reductionist science, which was only scientific over a limited range of phenomena.

Typical of paradigm shifts in any field, the science of human energy fields accommodates all observations and facts in conventional western medicine, but organizes a range of observations, predictions, experiments and applications that are disallowed by the paradigm it replaces. Proving the

objective reality of acupuncture and bringing it into western medicine is an example of the shift.

10
HUMAN ENERGY FIELDS AND ANTHROPOLOGY

The science of human energy fields has a wide range of applications within anthropology, and it can help to unite cultural and physical anthropology, because many beliefs and practices of indigenous peoples around the world are rooted in real EM physics. Australian aborigines of the eighteenth century knew a lot more about energy fields than do educated, urban North Americans at the beginning of the twenty-first century. The impact of western, industrial civilization on indigenous cultures has resulted in destruction of languages, religions, ritual practices, hunting patterns and attunement to the earth's geomagnetic field.

Industrial urban man is literally out of touch with nature at the EM level. This is a cultural dissociation that I described in my 1991 paper entitled, "The Dissociated Executive Self and the

Cultural Dissociation Barrier." That paper and this chapter are the foundation of a separate book, yet to be written, on the role of dissociation in the history of western civilization.

Once the Human Eyebeam Detection System is proven to operate reliably, then a core proposition of the science has been proven: the human spirit (mind/aura/EM field) extends outside the physical body and interacts with the outside world in a measurable fashion. This interaction has meaningful impact and function at spiritual, cultural, survival and evolutionary levels.

The core physiological reality underlying many traditional religious practices and beliefs has been overlooked by modern science, in part because the physiological reality has been cloaked in superstition. It is a case of throwing out the baby with the bath water. This is true of the human eyebeam – superstitions about the evil eye do not prove that there is no extramission. In my view, the correct scientific attitude is to regard traditional beliefs as hints and clues about the nature of reality. Or, one might say, a form of reverse

engineering is required, starting with the belief and working backwards to the underlying reality.

A wide range of aboriginal beliefs and practices can be studied within the science of human energy fields. If it is possible to turn on a light by looking at a switch, then what are the limits on this class of interactions? This is a scientific question, within the field of physics.

Fertility Rituals

Anthropology, the history of religion and related fields document numerous different types and forms of fertility rituals, using a broad definition of the term. The fertility of the female human body, of a field of crops, of the sky (to produce rain), and of the hunt can all be studied within the new science.

For instance, if the human eyebeam can be detected by a special light switch, or by someone who feels he is being stared at, then it is scientifically possible that a seed of wheat underground can detect the focused EM field of a shaman, or a group of May

revelers in thirteenth century Britain. It is scientifically possible that this could result in earlier germination and/or germination of a higher percentage of seeds. This effect could be studied under controlled conditions using EM fields generated by humans and by machines. Suitable gauges and EM field detectors could be placed at the same depth in the soil as the wheat seeds, or experiments could be done under hydroponic conditions for better observation of germination. This branch of the science could have commercial applications within agriculture.

The effect of a variety of fertility rituals and energy medicine practices on the pregnancy rates of couples in treatment for infertility could be studied, and the effects could be tracked by placing both members of the couple in the Whole Body EM scanner. In general, the EM signal coming back from the target of any fertility ritual would need to be tracked and understood.

Mental Telepathy

One reason mental telepathy lies outside western science is that it lacks an accepted mechanism. I see no difference between mental telepathy and cell phones. The human body, including the brain and solar plexus, definitely emit complex, digitized EM signals into the environment. If a laser can be bounced off the moon, and if we can see stars that died billions of years ago, it is safe to say that the human EM signal could travel considerable distances on the planet.

The unanswered questions are: does the EM signal contain information; does the information have content relevant to survival; can the solar plexus and brain receive and encode this information; and can this information be processed in a way that affects decisions, perceptions and behavior, even if subliminally?

These are all empirical questions. They are questions in applied physics, electrical engineering and electromagnetic medicine. We turn on televisions with remote controls, open garage doors without getting out of our cars, use laser pointers while giving lectures, and carry out countless tasks

that, in principle, are forms of mental telepathy between inanimate objects. The question is, can you make a cell phone call with your brain?

The answer is: you can. You can turn on a light by looking at a switch, therefore you can turn on someone else's neurons remotely. But can this effect can be retrieved from the EM background noise and processed so that it can be registered consciously? The Human Eyebeam Detection System also demonstrates telekinesis – when you look at the switch, your mind causes electrons to move.

Telekinesis is a fact, at the quantum mechanical level. It happens every time you look at something. The question is whether the telekinetic signal can be amplified by the transmitter, or transduced by the receiver, so that a macroscopic effect occurs. Moving electrons with your mind happens every day, and is no more mystical than a garage door opener. Ampliflying this signal so that it has reliable, practical applications at the macroscopic level is an engineering problem, not a theoretical problem.

Clairvoyance and Precognition

Like mental telepathy, clairvoyance, is scientifically possible. If spy satellites can read license plates from outer space, and if we can choose between satellite television stations in our living rooms, then there is no reason, in principle, that clairvoyance is impossible. If information about a remote location is transmitted in digitized form by people observing on site, then a remote receiver should be able to capture this information, process it, and turn it into a meaningful display. If TV cable stations can do this, then maybe the human body can too.

Precognition is completely different. In order for precognition (seeing the future) to be possible, the physics of time would have to be radically different from current common sense and current models in physics. The science of human energy fields, in its current form, is completely silent about how this could work. I mention this to illustrate how the science works: it postulates mechanisms that lie within the reach of current physics and electrical engineering, and then makes specific predictions

about how to test the theory. No such mechanism exists for precognition, so far.

The Power of Prayer

From an EM perspective, prayer involves a focusing of the praying person's electromagnetic field, and also an opening of the field to energy sources outside itself. This is inherent in the core attributes of prayer: humility, openness, vulnerability, and focus. The EM properties of both individual and group prayer can be studied within the science of human energy fields.

Water dowsers have tried to map the Ley lines and underground streams of the earth, and some have tried to correlate these lines with the locations of major cathedrals, churches, standing stones and other sites of worship in Great Britain. The idea is that the ancient architects placed a font, a church wall, a ritual berm, or a ring of stones, in a particular spot because of the local architecture of the geomagnetic field. These things were not random.

Such claims cannot be investigated scientifically with water dowsing because there is too much room for unconscious movement of the willow rod by the dowser, and no known mechanism for dowsing. The same does not apply to measuring local EM fields, which can be done with high precision. I predict that the EM field within, say, the Duomo in Milan is similar to the EM field created by group prayer, even when no one is praying there. The prayerful EM fields of the innumerable people who have spent time in the Duomo have been imprinted on the building, and are reinforced every day by the visitors of that day.

Some locations on earth have a local geomagnetic field that is similar in amplitude and frequency to the field created by prayer. That is why some locations are sacred. When humans then enter a prayerful state in that location, they amplify the field within themselves, and in the local space external to themselves. There is a sacred positive feedback loop.

The health benefits of these sacred fields can be studied within the science of human energy fields;

the healing power of prayer is scientifically possible within electromagnetic medicine. EM fields can also be weaponized, militarized, and used for destruction. This area of engineering development is called non-lethal weapons, and is heavily funded by military and intelligence sources internationally.

Remote Detection of Animals By Hunters

I remember watching a film of Bushmen in the Kalahari Desert throwing bones on the ground in order to determine the direction in which to leave on their hunt. To the western mind, this is pure superstition: there is no way the bones can figure out where the game is, then tell the medicine man. I agree with this skeptical viewpoint. I think the bones are just a device for focusing the remote viewing of the medicine man. The bones themselves don't actually do anything.

The Bushmen then set off in a specific direction and arrive directly at the gazelles, or whichever animal is being hunted, after running ten miles through the desert. The distance is too great for sound, smell or

sight to be operating. It is possible that the process is random and hit-and-miss. If so, how did the activity get selected for over millennia under the harsh Kalahari sun? Or, it could just be a social ritual and, really, the hunters just know the geography and habits of the game very well.

Let's assume that the ritual actually results in the medicine man obtaining real information. Within physics, there is only one way this can happen. The gazelle must emit an EM signature, and the medicine man must be able to receive it, process it, and register the direction from which it came. This poses a problem: how can the direction be determined without triangulation? Maybe the initial direction is rough and the hunters narrow the source down as they get closer. However it works in detail, if a medicine man can detect the signal, then it is possible to build a scanner that does the same thing.

Summary

Once the general logic of a sub-sector of the science is sketched in, there is no need at this point to fill

in all the details. Therefore this chapter is concluded.

11
THE KNOWLEDGE OF SPIRIT POWER: EXPERIENTIAL ORIGINS OF THE NEW SCIENCE

The experiential origins of the science of human energy fields are described in my books, Northern Studies, Songs For Two Children: On Dissociation and Human Energy Fields, Northern Canada, Literary and Anthropological Studies, Diary of An Intern and Spirit Power Drawings: The Foundation of a New Science. Yet-to-be-written descriptions of some of my experiences, and some passages in my clinical books like The Trauma Model and Schizophrenia also bear on the science. Here I will only summarize briefly my study of my own states of consciousness, conducted primarily in England, the Canadian province of Manitoba, and the Canadian Arctic.

By age seventeen, when I was living in London, I was engaged in study of my states of consciousness. I had learned that the conventional state of

consciousness in western civilization is constricted, and insulated from a broad range of human experience. In the western world we suppress and disallow many experiences that are too mystical or spiritual to fit the utilitarian agenda of the day. I decided to cultivate these experiences, and explore them. I did so by spending countless hours on Hampstead Heath, then in the woods in Somerset.

I became very aware of and tuned into the local and geomagnetic energy fields outside the cities. I felt the spirit of a tree, a lake or a rock. I didn't think that the rock or tree was thinking human thoughts, nor did I project human attributes onto the tree. The tree was a tree. But just as I could detect the tree's shadow with my eyes and my skin, and feel the cool shade under it, so I could directly sense the energy field of the tree.

I learned that I could attune my state of consciousness to a set of rocks, a tree, a beach, or the night sky. By doing this, I felt more alive, more rooted in myself, more sensual, and more connected to the earth. It was an experience, not a theory. I got out of my head and into my body.

When I moved to Norman Wells, in the Canadian Arctic, in 1970, I noticed that native people have this state of consciousness much, much more than white people. It is a rooted, physical, sensual, immediate knowing of the other person, the game, or the woods. It is not about theories, it is an immediate sensory connectedness. I could compare it to team sports. Learning to click with a teammate doesn't involve consciously memorizing and reviewing his usual moves. When you are "in the zone," the information is processed at the procedural memory level (the unconscious level). The conscious mind's job is to float free, monitor, and be attuned, but not interfere.

An athlete talks about "muscle memory." The memory may not literally be in the muscles, but elite team performance requires another mode of intuition, connectedness and physical presence. You can't excel in sports solely by using your intellect, although intellect must participate. You just can't do sports in your head. That's why athletes may describe a teammate as being "unconscious" when he performs particularly well.

These studies of my own states of consciousness constituted Step 1 in Table 2.1 . From this beginning, which involved a decade of intensive study, and reading in anthropology, history and philosophy, I then moved on to the next six steps. The author who helped me the most during this phase of my development, by far, was D.H. Lawrence. He talked about this mode of knowledge throughout his writings, notably in St. Mawr, Mornings in Mexico and Fantasia of the Unconscious, and also in Women in Love. I learned from Lawrence to take this mode of knowledge seriously, and to think about it carefully. From there, I moved on to the philosophy of science, the history of physics and medical school. I called the mode of consciousness I was studying, the knowledge of spirit power, hence the title of my book, Spirit Power Drawings.

12
FUTURE POSSIBILITIES IN ENERGY FIELDS

This book outlines the general principles of the science of human energy fields, but it only sketches in the broad outlines of the field, and some illustrative applications. We are bathed in an electromagnetic field, and we are dumping a lot of EM pollution into that field. The spiritual and health effects of EM pollution are in themselves a new field of study. So far, we have only hinted at the problems we are creating with modern technology and communications, with investigations into cancer caused by power lines and cell phones.

We know that radiation can cause cancer. It is possible that power lines could cause some cases of cancer, but clearly, the effect is subtle, if it exists at all. In general, in epidemiological studies of disease, subtle effects can be real, but large populations must be studied in order to detect them. If only the

occasional person gets cancer from living near power lines, then it is difficult to document the causality because the rate of cancer among people living near power lines is increased only minutely above baseline.

The problem gets even more complex when the effect under study is difficult to measure. It is easy to prove that a person has leukemia, even if it is difficult to prove that it was caused by a power line. When the “disease” under study is spiritual disconnection from the earth’s geomagnetic field, the effect is hard to demonstrate scientifically. The causes of the disconnection include insulation from the earth’s geomagnetic field due to concrete, the EM pollution caused by general urban EM noise, and cultural and psychological drives to disconnection.

FUTURE POSSIBILITIES IN ENERGY FIELDS

The Physical and Spiritual Effects of Electromagnetic Pollution

We need a new area of public health research, epidemiology and clinical intervention. The effects of general urban EM noise on physical and spiritual health are basically unknown. By “physical” I mean the biological body, and by “spiritual” I mean the body’s EM field. One can find books on the health effects of the local electrical circuits within one’s home, but these authors are fringe writers from the perspective of mainstream science. Their models, methods and findings have not been taken seriously.

Although there could well be trickle-down effects at the biological level, I expect that most EM pollution has its effects at the spiritual level, causing disconnections and disturbances in the mind and the subtle levels of the body field.

Weapons Development

Currently, there is a lot of defense contract money being spent on non-lethal weapons development. I touch on this in my book, The C.I.A. Doctors, and there are articles about non-lethal weapons in mainstream media outlets. These weapons involve

beaming EM and other forms of energy such as acoustic beams at targets. The energy beams can knock a person out, confuse him, or cause disabling physical symptoms. Non-lethal weapons have probably been used in recent wars in the Middle East and have probably been tested on military volunteers and unwitting civilians.

In the future, such weapons will come on line in conventional warfare. We will need international laws and regulations for such weapons, and the medical profession will need to establish ethical guidelines for the participation of physicians in non-lethal weapons research and development. At present, organized medicine, psychiatry and psychology are acting as if such weapons don't exist, although professionals from these fields must be involved in assessing the impact of such weapons. Remote EM torture and population control will be big problems in the future.

Surveillance Technology

EM scanning including the Human Eyebeam Detection System could be used in numerous

different military, intelligence and domestic applications. Such technologies, along with acoustic technologies, could virtually eliminate privacy. It should be possible to track an individual anywhere on the planet, and it should be possible to tell whether a person has entered a room since it was last sealed off. If the EM signature of a person is as distinct as his fingerprint, voice print, retinal pattern or DNA then it should be possible to identify an intruder electromagnetically and store or transmit that information digitally.

Like applied physics in general, the science of human energy fields is a two-edged sword, and will be used for both death and healing.

Household Devices

As described earlier in the book, we have only seen the beginning of household devices that tap into EM fields. A local wireless network inside your home, cell phones and satellite TV are only the beginning. So far, all EM technology requires an interaction between two manufactured devices and then transmission of either sound or light to the

receiving person. In the future, a wide range of devices will interact directly with the EM field of the person. This could involve a garage door opener activated by the human eyebeam, or signals sent to the person in response to fluctuations in his EM field.

For instance, when the EM field shifts from sleep to wakefulness, the radio could come on. The voice of the home computer system could respond to changes in mood, hunger or arousal in a variety of fashions, by sensing the changes in the occupant's EM field.

The Entertainment Industry

Sex, drugs and rock and roll will always be popular. Manufacturers will learn how to modulate states of consciousness using EM fields, and these devices will be used for legal and illegal purposes. There will be EM addictions, EM pornography and EM family entertainment. In terms of toys and games, children would, I'm sure, love to activate a wide range of devices using their eyebeams.

Eyebeam technology could be used for both painting and music. If a circular or concave array of sensors was constructed that occupied the entire visual field of a person, the person could paint a digital picture by changing his direction of gaze and the amplitudes of different frequencies of eyebeam energy. Different software could convert the input into music. The same applications could be designed for the Human Chakra Detection System and the Whole Body EM Scanner. In medicine, “the music of the body” would sound different depending on the health or disease of the person. I predict that listeners could easily tell the difference between the eyebeam music – or the eyebeam art – of a depressed, a normal and a manic person.

In the reverse direction, a Mozart horn concerto, country and western and rap music should induce measurably different EM states in the bodies of listeners.

Medical Technology

Medical applications of the science of human energy fields will be numerous. Samples of these

were outlined in previous chapters.

Food and Agriculture

The effects of EM fields on fruits, vegetables and livestock are another field of study within the new science. Many consumers are concerned, needlessly, that irradiated foods are radioactive or hazardous to their health. Irrational, unscientific reactions to genetic engineering of crops are common. There are also realistic concerns and worries in these areas.

The same problems will occur when EM fields are used, cheaply, to speed up germination or enhance growth in fields and on farms.

Summary

Since electromagnetic fields are everywhere all the time, we are constantly bathed in an EM ocean. One way or another, EM fields are involved in everything we say, think, feel and do. Therefore potential applications of the science of human energy fields are wide in range, great in depth, and

full of potential for both evil and good. As we have heard in all mythologies and in all cultures, the cosmic field has both dark and light sides, and can be used to promote either life or death. I vote for life.

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APPENDIX

This Appendix is addressed to everyone who has read the rest of Human Energy Fields, but it will not interest every reader. I include the discussion of dissociative identity disorder (DID) because I have written a series of books about it, and it is a specialty interest of mine in psychiatry. I imagine that most readers of Human Energy Fields will find this discussion a bit peripheral, so I have placed it here in order not to interrupt the flow of the other chapters.

The chapter on the two-slit experiment in physics is a bit technical and it presupposes some knowledge of the philosophy of science and the logic of the quantum enigma, the measurement problem, the Copenhagen interpretation of quantum mechanics, and related topics. No mathematics is required, however.

I have tried to write the chapter on the two-slit experiment so that it is accessible to most readers,

but some intellectual effort is required to follow the argument, for those not familiar with the vocabulary and logic of the subject matter. The main purpose of this chapter is to demonstrate that I have thought about the philosophical implications of quantum mechanics for the science of human energy fields: I think those implications are minimal.

That said, it may be true that, some time in the future, concepts like quantum tunneling and non-local causality could lead to technological applications in energy medicine. The mathematics of quantum mechanics is impenetrable to me, so I can't say much about such possibilities. However, given that the speed of light is 186,000 miles per second, and given that brain processing time for sensory input is measured in hundreds of milliseconds, all EM digital information is transmitted instantaneously from the perspective of human consciousness. Therefore, in my view, non-local causality is not required for the practice of energy medicine or the study of human consciousness.

DISSOCIATIVE IDENTITY DISORDER AND WHOLE BODY EM SCANS

Dissociative identity disorder (DID) was formerly known as multiple personality disorder. The alter personalities who take turns being in control of the body in DID are not literally separate people. It is essential to understand what I call the central paradox of DID. I explain this to people in my cognitive therapy group by saying that DID is both real and not real at the same time. It is not real in the sense that there is not literally a bunch of little people running around inside your brain. If we took an x-ray of your head, we would not see a bunch of little skeletons in there.

On the other hand, DID is psychologically real. People with the disorder really do come to in a new location, unable to remember previous hours or days, with no idea how they got there. These experiences really happen. So DID is psychologically real, it just isn't literally real.

People who believe in DID and people who don't believe in DID are both half right and half wrong.

In treatment, it is important to understand the central paradox of DID in order to prevent two errors from occurring. If you back out of the reality of DID too far into skepticism, as a therapist, you lose all empathy, can't meet the person where she is, and can't work with her psychological reality. On the other hand, if you get lost in the vivid inner world of the different personalities, their histories and interactions, and take it all too literally, then the internal video game goes on forever and there is no recovery.

For recovery to occur, both therapist and client must keep a foot in both realities, sometimes emphasizing one more than the other in a balanced, fluid, flexible fashion.

Stated differently, under certain experimental conditions, DID appears to be a psychological reality, while under other experimental conditions it appears to be a psychological illusion. This sentence can be modified by changing "DID" to

“light,” changing “appears to be” to “behaves as,” changing “psychological reality” to “particle,” and changing “psychological illusion” to “wave.” The sentence then becomes: under certain experimental conditions, light behaves as a particle, while under other experimental conditions it behaves as a wave. The logic of the central paradox of DID is the same as the logic of the wave-particle duality in physics.

Given the central paradox of DID, no EM scan can “prove” that DID is literally real, because it isn’t literally real. DID is an intense subjective illusion created by the mind to cope with overwhelming trauma – the trauma is too much for one person to cope with, so an inner team is created. Each team member deals with a more tolerable subcomponent of the whole picture.

Within my science of human energy fields, the research goal is not to prove that DID is literally real. Instead, it is to prove that DID has an EM signature than cannot be produced by a well-trained actor. There are two competing models of DID in the mental health field. The trauma model states that the alter personalities are distinct

psychophysiological states created naturally to cope with trauma. The sociocognitive model says that DID is created in therapy through a process called role enactment.

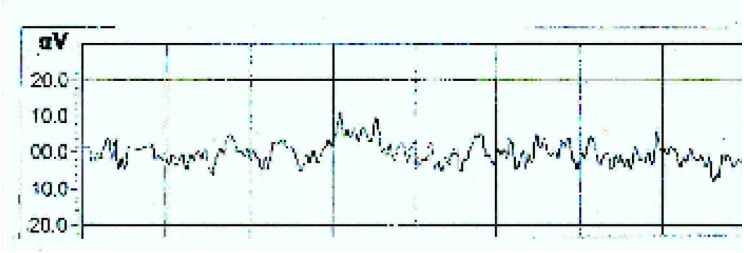
DID does not exist prior to therapy, according to the sociocognitive model. Instead the DID is unconsciously role enacted in response to cues, suggestions and leading questions by the therapist – there is no distinct psychophysiological state, and the DID will go away if you ignore it and stop reinforcing it.

The trauma model proposes that the EM signatures of child alter personalities in DID differ significantly from the EM signatures of the adult host personality in the same body. The signatures of child personalities resemble norms for biological children, while those of adults resemble norms for adults without DID. This prediction of the trauma model can be tested with EEG data using z score software that is already normed across the life span and commercially available.

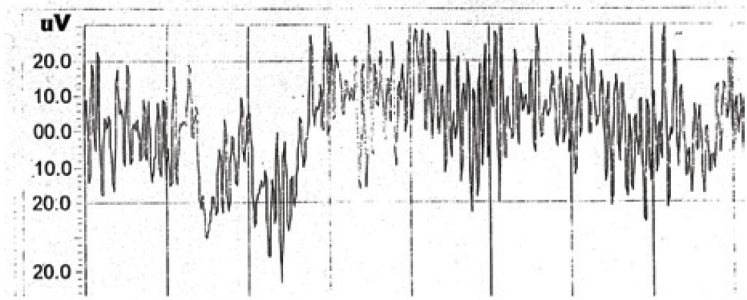
The Whole Body EM Scanner can provide definitive evidence that the trauma model of DID is correct or incorrect. Figure Appendix. 1 shows the EEG signatures of a set of alter personalities in Cameron West, who describes his DID in his autobiography, First Person Plural. Leads were placed on Cameron West's forehead (crown chakra), at standard scalp locations called F3 and F4, and a tracing was obtained while each personality was in control of his body, and during the process of switching from one personality to another.

Figure Appendix. 1. EM Signature of Different Personalities and the Switch Process in Cameron West

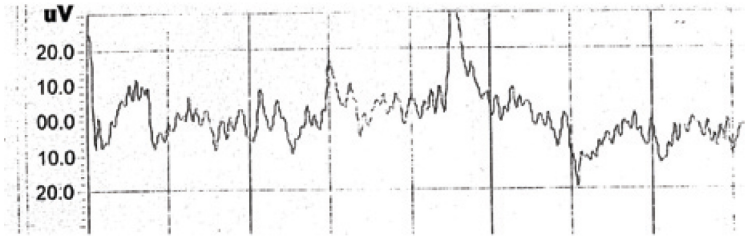
Cameron



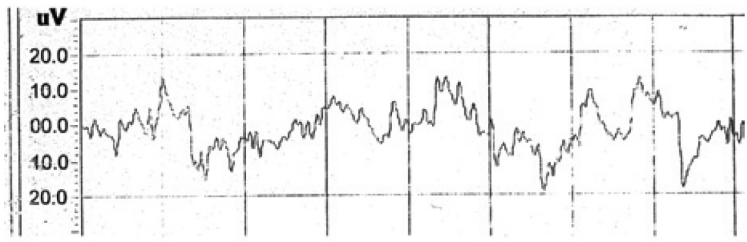
Roger



Switching From Cameron to Roger



Wyatt



The equipment used was an EEG system developed by Margaret Ayers (www.neuropathways.com) , who took the readings in her office in California.

The tracings are distinct at a glance. If trained actors, called simulators in the psychology literature, can mimic the behavior of DID well enough that experts in DID cannot distinguish them from actual patients, then the sociocognitive model of DID could be correct. If, however, simulators cannot produce distinct EM states as recorded by the EEG, then there is a real, physical difference between genuine DID and simulated DID.

Simulation and role enactment are separate things within the sociocognitive model, however. Simulation is conscious fakery. Role enactment is more unconscious, and the person enacting DID in response to cues and suggestions from a therapist usually believes she has DID. Therefore, to settle the matter, one would have to do EEG readings on individuals judged to be role enacting DID by adherents of the sociocognitive model.

The problem then becomes how to differentiate genuine DID from role enacted DID clinically. This can be done only by histories taken from the person and from collateral informants. If a person judged to be role-enacting DID has EEG differences

between personalities that are the same as those in "genuine" DID, what would this mean? It would mean that DID produced by role enactment in therapy is just as "real," from an EM perspective, as DID arising naturally in reaction to childhood trauma. This takes us back to the central paradox of DID.

In the end, ideologically fixed believers in either the trauma or the sociocognitive model of DID (the wave or particle nature of DID) cannot be persuaded to change their positions by EM data, unless all can agree clinically on who is role enacting and who has trauma model DID. If that agreement can be reached, and if role enactors fail to generate distinct EEG signatures for different personalities, then the matter will be settled.

Recall, however, that the point of the exercise is not to prove that DID is "real." Nor is it to prove that DID is not real. EM data cannot unravel a closed tautological loop, and therefore cannot persuade adherents of fixed positions to change their minds (such intellectual fixity is itself an EM field problem

with a distinct Whole Body EM Scanner signature, I predict).

DID As A Laboratory Model Of Distinct EM States

Any case of DID in which the alter personalities have distinct EM signatures provides fertile ground for scientific study. Compare DID to bipolar mood disorder, for instance. I predict that the depressed and manic states in a person with bipolar mood disorder have distinct EM signatures. To prove this, one would have to enroll a large number of people in a study, and wait for them to become manic and depressed. This could take years and would be difficult logistically. Also, there would be ethical problems in delaying treatment long enough to obtain scans.

If the diagnosis is DID, however, distinct switches of state can be produced on any day by simple request. The sequence of states can be varied systematically, and the person can be given an endless array of cues, stimuli and challenges in different states. Assume there are personalities A, B,

C and D, all of whom can take executive control upon request. What are the possibilities using the Chakra Detection System or the Whole Body EM Scanner?

Imagine that personalities A and B are clinically depressed while personalities C and D are not. This happens commonly. I predict that the EM signatures of A and B would differ from C and D in the same way that the signatures vary in a person without DID, depending on whether he is depressed or not. This would be true independently of the sequence in which the alter personalities were called out, but with some degree of leakage and lag.

If A is called out for five minutes, and then B, the EM state of B will be more depressed than if C is called out for five minutes, followed by B. If A is called out followed by D, the state of D will be more depressed than it is when C is called out first. Inversely, A will be less depressed if C is called out first rather than B. The depression of A can be partially treated by having A and C be co-conscious and co-present. Co-conscious means that there is no amnesia between A and C; co-present means that A

and C are sharing executive control at the same time.

These switches of state will be accompanied by changes in interleukins, cortisol, adrenalin, brain glutamate transmission, and other biological variables.

The next stage of research would be to do interventions in different states, in different sequences and combinations. For instance, an antidepressant might reduce the depression in A and B, in which case the EM signatures of both should become more like C and D. If C and D develop side effects like loss of sex drive, however, this should be accompanied by reduced EM traffic between the pelvic and head chakras when C or D is in executive control. If A and B had already lost their sex drive due to their depression, this shift in EM signature would not occur in their scans.

Technically, this effect would be described as an experimental dissociation between the antidepressant benefit and sexual side effect of the drug. This would be a dissociation in the general

systems sense, and it would confirm the reality of the clinical dissociative disorder.

If two alter personalities A and B were both depressed, but there was complete amnesia between them, in principle one could receive a brief course of cognitive therapy, while the other received a neutral control treatment. If the depression scores of A dropped more than those of B (there might be some leakage), then the EM signature of A but not B should shift towards those of C and D.

People with DID commonly meet criteria for numerous different disorders including depression, posttraumatic stress disorder, somatization disorder, obsessive compulsive disorder and substance abuse. If alter personalities with and without any of these symptoms could switch on request, then they could be run through the relevant protocols.

In principle, a person with a snake phobia could be scanned with no snakes in the room, and with snakes nearby, but recruiting volunteers would be

very difficult (not to mention recruiting technicians). In DID, in comparison, it is not hard to identify alter personalities who are extremely different in their resting anxiety levels.

Once the “debate” about the reality of DID is set aside, people with the disorder become potentially invaluable research participants. Any number of psychophysiological states and variables could be studied in people with DID, within the science of human energy fields, from pain, to IQ, to chi meridian flow.

Once the EM physiology of state change in DID is well defined, then the findings can be applied to people without DID. For instance, environmental signals can switch a person with panic disorder into an extreme anxiety state. These signals include high doses of caffeine and exposure to a phobic stimulus. If a person with panic disorder has an extreme fear of elevators, a panic attack can be induced easily and reliably by having the person stand in front of an open elevator. This panic response can be blocked by medication or cognitive-behavioral

therapy in individuals who respond to treatment, as can the panic response to high doses of caffeine.

We thus have a psychophysiological system in which the panic state can be induced by physical or psychological signals, and blocked by both psychological and physical interventions. There are eight combinations of results, depending on whether the treatment works or not:

- elevator-cognitive therapy- no panic
- elevator-medication-no panic
- caffeine-cognitive therapy-no panic
- caffeine-medication-no panic
- elevator-cognitive therapy-panic
- elevator-medication-panic
- caffeine-cognitive therapy-panic
- caffeine-medication-panic

In the experimental volunteer with DID, this array of results looks similar, except that the panic-no panic results can be obtained before the treatment. Alter personality A has panic disorder and alter personality B does not:

- elevator-A-panic
- elevator-B-no panic
- caffeine-A-panic
- caffeine-B-no panic

Now the treatment intervention can be applied to the study:

- elevator-A-panic-cognitive therapy-no panic
- elevator-A-panic-cognitive therapy-panic
- elevator-B-no panic-cognitive therapy-no panic
- caffeine-A-panic-cognitive therapy-no panic
- caffeine-A-panic-cognitive therapy-panic
- caffeine-B-no panic-cognitive therapy-no panic
- elevator-A-panic-medication-no panic
- elevator-A-panic-medication-panic
- elevator-B-no panic-medication-no panic
- caffeine-A-panic-medication-no panic
- caffeine-A-panic-medication-panic
- caffeine-B-no panic-medication-no panic

This is a much richer and more instructive array of outcomes. The EM signatures of all of these

outcomes can be compared to all of the others, yielding clues as to why the treatment interventions work or do not work. The clues could be biological or psychological factors that differ between alter personalities A and B.

This general pattern can be applied to all psychophysiological states and all experimental manipulations of interest, within the limits of medical ethics. DID could be a practical, affordable laboratory model for a wide range of research studies in the science of human energy fields. The same could be true within other areas of science including physiology, social psychology and many other disciplines.

Hippocampal Volume Normalization in Successful Treatment of DID

Accumulating evidence from humans and laboratory animals indicates that psychological stress damages the hippocampus, a part of the limbic system of the brain that is involved in memory. For instance, in experiments with mice, in which all the mice are members of the same genetic

strain, the animals are randomly assigned to an experimental group and a control group. The experimental group is subjected to severe, chronic psychological stress during childhood, while the control group has a normal upbringing. All other variables such as diet and room temperature are held constant.

As adults, the traumatized mice have shrunken hippocampi. When their brains are examined under a microscope, there is clear, visible damage to neurons in the hippocampus, but not in their brains generally. We know this has been caused by the stress because of the experimental design. There are likely several biochemical pathways by which this damage takes place.

One pathway has been well studied: in all mammals, psychological stress causes the release of cortisol from the adrenal glands. The elevated levels of cortisol in the blood help shunt energy from more long term functions to the immediate demands of the fight-or-flight response. Simultaneously, adrenalin is released from the adrenal glands, and it also shunts blood supply and

other energy sources to the fight-or-flight response to threat or danger.

The high level of cortisol has little or no general toxic effect on the brain, but in the hippocampus it affects the gates in the neuronal membranes. The gates are opened too much or too long, and toxic metabolites and brain molecules flood into the cells, causing cell damage or death. As a result, the hippocampus measurably shrinks in size. This effect has been shown in humans with posttraumatic stress disorder (PTSD) and DID. In humans, it hasn't yet been proven that the hippocampal volume reduction occurs after the trauma, rather than before it, but this seems likely based on the animal data. There could be some people who develop PTSD because they have damaged hippocampi and some people where it is the other way around.

Another pathway contributing to hippocampal damage is probably glutamate neurotransmission: stress increases gluatamate release in the hippocampus to toxic levels. Whatever the pathways, and whatever the percentage of people with PTSD and DID whose hippocampal damage is

part of their trauma response, in at least a subgroup, likely, the damage would not have occurred if there had been no trauma. The degree of shrinkage is greater in DID than it is in PTSD, so people with DID are good subjects for this line of research.

I propose that the hippocampal damage in DID, in most or all individuals, is part of the normal mammalian stress response. It's not that people with DID are inherently abnormal; rather, they have extreme trauma so they exhibit the toxic effects of trauma on the brain to an extreme degree. People with DID are normal in terms of their cortisol and hippocampal genes – unfortunately, an evolutionary design error in all mammals results in hippocampal damage in response to severe, chronic stress.

There are already data showing that SSRI antidepressants can stimulate hippocampal cell repair and growth in traumatized mice. I propose that psychotherapy is more effective than medications at reversing hippocampal damage in human beings (we don't have good psychotherapy

protocols for mice and, besides, they don't have health insurance). This leads to several predictions:

1. In individuals with DID, there is measurable hippocampal damage.
2. Given what is known about hippocampal function, it makes sense that individuals with the most impaired hippocampal function should be the most poorly integrated = the most dissociated.
3. Long term psychotherapy for DID will result in normalization of hippocampal volume and resolution of their dissociative disorder.
4. Individuals who do not participate in or respond to therapy for DID will not recover their function or their hippocampal volume spontaneously.
5. The effect of psychotherapy on hippocampal neurons will be synergistic with the effects of SSRI medications.
6. Other biological abnormalities such as cortisol dysregulation will also improve or return to the normal range in successful therapies.

If these predictions are correct, then, with existing psychotherapy protocols, clinical symptom measures, and MRI scanning technology, we have the ability to demonstrate repair of central nervous system tissue through psychotherapy.

This was scientifically impossible when I was in medical school. Back in the 1970's and 1980's, it was an unquestioned dogma of biology that neurons cannot be repaired or replaced. Other tissues such as skin can self-repair, but not the brain, according to the dogma. In the last decade it has been proven that this dogma was mistaken. In fact, especially in the hippocampus, damaged neurons can be repaired and new neurons can be created to replace dead ones.

The science of human energy fields predicts that the controls for brain self-repair are electromagnetic. Psychotherapy operates at the subtle levels of the EM field – these levels are called the mental, astral, etheric and causal bodies in different mystical systems. I say that all these non-physical "bodies" are ever-more rarified and subtle

levels of a unified EM field that includes the physical body.

The process of brain self-repair through psychotherapy can potentially be tracked in a Whole Body EM Scanner. The first change in the organism, in response to psychotherapy, is in the mind, not the body. The mind EM field has the property of being self-organizing. The first stage, electrophysiologically, I propose, is generation of a phantom hippocampus: brain self-repair must be related to salamander limb regeneration.

Psychotherapy initiates a subtle reorganization of the brain and body EM fields, which we track clinically as changed beliefs and cognitive errors, a commitment to sobriety and, in DID, increased communication and cooperation between alter personalities. Through DID psychotherapy, dissociated brain modules learn to talk to each other. The subtle change in the EM field is deepened, reinforced and amplified through a process called generalization.

Eventually, the change in the EM field becomes strong enough that it affects the EM environment at the biological level. Neuronal polarization, membrane channel physiology, gene expression and other functions are modified. Genes are turned on and off, nerve growth factor production increases, and biological self-repair is initiated.

The process is not haphazard, however. Whereas SSRI medications provide an unstructured, non-specific stimulus to neuronal repair, psychotherapy guides the creation of new dendritic connections in the brain in a functional, organized, integrated manner.

Once this effect has been demonstrated and replicated, causal interaction between the mind and brain will be scientifically proven to be bi-directional. The brain runs the mind and the mind runs the brain. Dualism and materialism will have been refuted scientifically. They have always been scientifically mistaken. The problem with materialism and reductionism is that they are scientifically wrong. That is not how the physics, the chemistry and the biology work.

THE TWO-SLIT EXPERIMENT IN PHYSICS

The film What the Bleep Do We Know deals with the philosophical implications of quantum mechanics. Interviewees in the film talk about non-local causality and other quantum mechanical ideas and claim that quantum mechanics provides support for the existence of free will, God, and the human spirit. Similar claims are made in some of the books listed in the bibliography.

I disagree. Non-local causality, the quantum enigma and similar ideas (explained below) make no sense to me. The purpose of this Appendix is to show why that is so. I argue in this Appendix that ideas like the quantum enigma, non-local causality, the collapse of the wave function, and a photon interfering with itself defy common sense. Is it possible that the Copenhagen interpretation of quantum mechanics is wrong? Yes. But is it likely that I have proven this using simple logic? Some will say, “No.”

Consider Chapter 1 of Human Energy Fields, however: western science has been making the simultaneous claims that no life force is allowed, everything reduces to inanimate forces and particles, and some things are alive and some things are dead, for hundreds of years. If Nobel Prize winners endorse the core logical flaw of materialism, then, I say, it is perfectly possible that the quantum enigma and non-local causality are logical errors that defy common sense. It is possible that common sense is correct.

My analysis of the philosophical implications of quantum mechanics is placed in an Appendix because it is peripheral to the main body of the book. I include it for interest and completeness, but my analysis could be mistaken without that having any effect on the science of human energy fields. The science is based on quantum mechanics, since it deals with electromagnetic fields, but it functions in the middle world of human experience and the biosphere – midway between the tiny scale of quantum mechanics and the cosmic scale of relativity theory. So, with the caveat that my thinking may be erroneous, let me continue:

The Two-Slit Experiment

First performed by Thomas Young in 1801, the two-slit experiment proved the wave nature of light. It is one of the most famous experiments in physics. In the twentieth century, with the addition of photon detectors to the protocol, the two-slit experiment proved the wave-particle duality in quantum mechanics. Under certain experimental conditions, light behaves as a wave, while under other conditions it behaves as a discrete particle or quantum, which we call a photon.

The conundrum is whether light is a wave or a particle. The answer is that it is neither and both. This logic is taken for granted as unremarkable in the twenty-first century, but creating that logic required many years of intellectual labor by leading physicists. No such logical structure existed, or was required, by classical physics.

Recently, claims have been made that the two-slit experiment and other features of quantum mechanics provide evidence for the existence of free will, consciousness, and even God. To me, all

such claims appear to be mistaken, and based on logical errors and incorrect inferences. Quantum mechanics is a highly successful method of making calculations in physics and engineering, but, in its present form, it tells me nothing about the nature of consciousness, free will or spirit.

There are logical errors and unresolved contradictions in popular explanations of the two-slit experiment, and in philosophical implications drawn from the experiment. Quantum mechanics has successfully accounted mathematically for all experiments conducted to date: my focus here is on logical and philosophical interpretations of the two-slit experiment, not on the mathematics, the engineering, or the quantum mechanics as such.

The “philosophy” of quantum mechanics has little or no relevance to the science of human energy fields. Quantum mechanics, in and of itself, does not lead to the ideas, experiments, devices and applications of the science of human energy fields. It will, however, play a role in the electrical engineering aspects of the science. The following discussion presents my arguments for why

quantum mechanics tells me nothing about free will, consciousness, God or spirit.

The Two-Slit Experimental Apparatus

The experimental apparatus consists of a light source, a screen with two slits in it, and a detector panel on the far side of the screen. When a bright light source is used and both slits are open, the interference pattern on the detector panel demonstrates the wave nature of light. The interference pattern is an array of alternating dark and illuminated bands on the panel, as demonstrated by Thomas Young early in the nineteenth century. When a photon detector is used on the far side of the screen, however, light arrives only as discrete quanta or particles.

This is the wave-particle duality, which is an indisputable fact: under some experimental conditions, light behaves as a wave, while under others it behaves as a particle. A second indisputable fact is: the equations of quantum mechanics predict the outcome of all experiments conducted to date. There is no doubt that the

mathematical machinery of quantum mechanics works. The equations have lead to the invention of lasers, computers, MRI machines and many other devices.

A logical conundrum arises, however, when the light source is dimmed to such a degree that only one photon at a time passes through the screen. As a lay person who cannot follow the mathematics, I will conduct a set of thought experiments to check out the two-slit apparatus from both a wave and a particle perspective, and I will discuss the logical problem sometimes called the quantum enigma or the measurement problem: how can a single photon be at two places at once; how can it interfere with itself; and how does the act of observation collapse the probability wave function of the photon into a single location?

A Photon Wave Packet

A wave and a particle are not completely different in quantum mechanics. The main difference between them is that a “wave” is spread out over a much larger area, sometimes meters or greater. A

particle like a photon is different from a billiard ball or a marble – it is not a hard little object with a discrete boundary. Instead it is a tiny wave that occupies a tiny space. Within that tiny space, it is fuzzy and spread out. It doesn't have a single precise location, but it isn't spread out over a large area like a "wave." A particle does have a frequency and a wave function, however, which is a mathematical formula describing it.

A particle has a wave function, then, as does a wave. This could be confusing unless one realizes that a particle – sometimes called a wave packet – is a very small wave in a restricted, small region. Nevertheless, a particle has a frequency and can be represented mathematically as a wavy line just like a large, macroscopic wave of water. The wave property of a particle is involved in the so-called quantum enigma.

Thought Experiments: An Initial Check of the Two-Slit Apparatus From A Wave Perspective

The apparatus in its usual configuration works perfectly. An interference pattern of alternating dark and light bands appears on the detector panel. In analogy with waves on water, this is perfectly comprehensible. The initial light wave leaves the source, then a new light wave is generated at each slit: these two waves interfere constructively and destructively on the detector panel, creating the interference pattern.

The same thing happens when the same experiment is conducted with water: a stone is dropped in the water (equivalent to the light source); a single wave spreads out in the water until it hits a barrier with two slits in it; two new waves are formed, one at each slit, that carry forward till they hit another barrier; at the second barrier, in alternating bands, there are high waves and no waves.

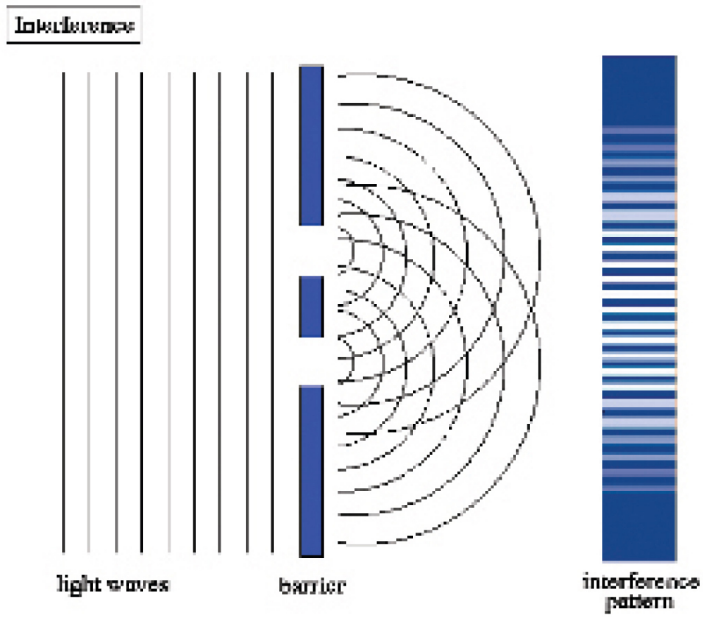
This happens because of the geometry of the situation, for both light and water. The apparatus is set up so that light going through slit one and arriving in a dark band on the detector panel is at the peak of its wave, while light going through slit

two is at the trough of its wave. The two cancel out and there is darkness. This is destructive interference. The waves are out of phase because the path from the source through slit one to the screen is different by just enough distance for the two waves to get perfectly out of phase.

A little further to the left or right, and the path lengths through the slits to the screen are equal in length (or differ by an integral number of wavelengths), so they add together and there is a bright zone. This is called constructive interference; the two waves in phase with each other add together. The pattern repeats because as you move left and right along the panel, there are alternating bands where, due to the geometry, the two waves are arriving in or out of phase.

The diagram of the two-slit experiment can apply to either light or water waves. In the case of water, the observer is looking down at the surface of the water from above.

Figure Appendix 1. A Diagram of the Two-Slit Experiment



The appearance of the pattern will vary if the two slits are moved closer together or further apart. The system works experimentally and is understandable to a lay person such as myself, even though I can't do the mathematics. Constructive and destructive interference are both required in order to observe an interference pattern on the detector panel: one creates the bright bands, the other the dark bands. Light actually arrives in

the dark areas, but it cancels itself out. This is very different from the absence or non-arrival of light in the dark areas.

Some Variations on the Apparatus

Just to convince myself that all is well, I will perform an additional series of thought experiments that involve single variations from the standard configuration. In all these experiments, the light source continues to be bright:

Table Appendix. 1. Variations on the Wave Experiment

	Interference Present or Absent
1. Set slit one and slit two so that they overlap (one small slit)	-
2. Set slit one and two so they touch (one large slit)	-
3. Move the two slits several miles apart	-
4. Move the detector panel so it is	-

touching the screen

5. Make the screen one mile thick -

   All of these results are perfectly understandable, and I continue:

6. Move the detector panel so it is one inch from the screen -

This result proves to me that no interference is detectable for at least one inch past the screen and that no interference is occurring in or immediately after the slits. Result 6 is based on the geometry of the experimental apparatus, as shown in the diagram.

Rechecking The Apparatus From A Particle Perspective

I now repeat the experiment from a particle perspective using a photon detector at the panel, and with the light source still bright. I do the experiment in the standard set-up, where I detect photons, then in my six variations.

Table Appendix. 2. Variations on the Particle Experiment

		Photons Detected
1.	Set slit one and slit two so that they overlap (one small slit)	+
2.	Set slit one and two so they touch (one large slit)	+
3.	Move the two slits several miles apart	–
4.	Move the detector panel so it is touching the screen	+
5.	Make the screen one mile thick	–
6.	Move the detector panel so it is one inch from the screen	+

In order to produce result 5, I have assumed that the photons entering the slits in condition 5 are all absorbed before they get through the one-mile long slit. From these two sets of experiments I learn that photons can arrive at the detector panel in the absence of interference, and that two slits are required for interference to occur. More

importantly, I have demonstrated that no interference occurs at the slits or for a definable distance beyond the slits (defining this distance experimentally would involve moving the detector panel further and further away from the screen, or, the same answer could be obtained using geometry alone).

I have convinced myself that everything makes sense geometrically. Nothing is mysterious or counter-intuitive. I think of the wave as a huge number of photons going through slit one or two at random. Interference occurs because individual photons interfere with each other in huge numbers producing the results predicted by the wave analysis.

At this point, as a lay person, I don't worry about the physics of how a single photon interferes with another single photon. I assume that this has to do with the wave function of an individual photon that arrives at the peak of its frequency oscillation interfering destructively with a photon that arrives with its wave function at the trough of its oscillation. I assume that this averages out over

countless photons to produce the same interference pattern as predicted by a wave analysis.

Dimming The Light Source So Single Photons Go Through the Screen

The quantum enigma arises when the light source is so dim that only one photon at a time goes through the experimental apparatus. However, I don't see the enigma. It seems to be an artifact of errors in logic. The quantum enigma is:

Table Appendix. 3. The Quantum Enigma (The Measurement Problem in Quantum Mechanics)

The Experimental Facts

1. Only one photon at a time passes through the experimental apparatus because the light source is so dim.
2. At the moment a photon leaves the light source, there is a 50:50 probability that it will go through slit one, and a 50:50 probability it will go through slit two.

3. When two slits are open, interference is observed at the screen, but when only one slit is open, no interference occurs.

The Interpretation of the Experiment Within Popular Explanations of Quantum Mechanics (The Copenhagen Interpretation)

1. A photon at slit one must be able to tell whether slit two is open or closed in order to "decide" whether interference should or should not occur.
2. An individual photon must therefore go through both slits at the same time for interference to occur, and it must interfere with itself. This is so because only one photon at a time is traveling through the experimental apparatus.
3. As it passes through the screen, the photon must be in two places at once in the form of a widely distributed probability wave function (the 50:50 odds of it being at slit one or slit two).
4. Prior to its being observed by a piece of experimental equipment, the photon exists only as a probability wave function. It is said to be in a state of superposition. The photon is at both

slits at the same time, but at neither slit – it exists only in mathematical space as a probability wave function, not as a particle with a location in physical space.

5. If we set particle detectors at the slits, our act of observation there will collapse the wave function to create a particle existing at either slit one or slit two, but not at both. The particle did not exist as a particle in physical space until the observation was made.
6. The quantum enigma is: how can a photon be at two slits at the same time; how can a photon interfere with itself; and how does the act of measurement, or observation, force the photon to materialize at one slit or the other?

The Philosophical Implications of the Quantum Enigma According to Various Authors

1. If we decide to place a photon detector at slit one, this forces the probability wave function to collapse at slit one, not slit two.
2. If we close slit two, the photons going through slit one know not to create an interference

pattern on the screen.

3. This demonstrates an interaction between the act of observation and the physical events being observed.
4. The conscious human observer is part of the experimental apparatus, just like the photon detector, because his conscious choices affect the physical events occurring in the apparatus.

The quantum enigma seems to me to be an artifact of several errors in logic. If the errors are corrected, the quantum enigma disappears. There is therefore no quantum enigma from which to draw philosophical inferences. The errors of logic are:

Table Appendix. 4. Errors of Logic That Give Rise to the Quantum Enigma

1. Thinking of light as being simultaneously both a wave and a particle, which is not permitted by the wave-particle duality or by the Copenhagen interpretation of quantum mechanics.
2. Assuming that the probability wave function is the same at the slits as it is at the light source;

from this it follows, erroneously, that the wave function collapses instantaneously when a photon detector reading is made at a slit.

3. Thinking of the probability wave function of the photon as a physical reality, when it is purely mathematical in nature.
4. Assuming that an interference event or "decision" is occurring at slit one and two.

The Copenhagen interpretation of quantum mechanics got its name from the fact that Neils Bohr, its primary architect, lived in Copenhagen. It provides the dominant and accepted view in contemporary physics. The accepted logic of the wave-particle duality states that light behaves as either a wave or a particle, depending on the experimental apparatus being used, but never as both at the same time. A rule of the Copenhagen interpretation is: we cannot make any claims or statements about physical reality during periods of time between measurements.

This rule is hard to follow because it is counter-intuitive. It appears to state that physical reality does not exist until it is observed: the act of

observation collapses the probability wave function of the particle into a particle with a specific location in physical space. Prior to the act of observation, however, the particle existed in a state of superposition. In the two-slit experiment, for instance, it was at both slit one and slit two at the same time, but at the same time it was at neither slit. It existed only in mathematical space, and had not yet materialized in physical space.

Making statements about the particle being at both slits prior to the act of observation collapsing its probability function violates the rule that we cannot make statements about the physics of particles during time periods between observations. We can't say if the particle is at one slit, both slits, neither slit, or heading in the opposite direction of the screen. The Copenhagen Interpretation forbids us from saying that the photon is at both slits at the same time, it seems.

Another error of logic is the claim that the act of observation causes the probability wave function of the photon to collapse, which in turn causes the photon to materialize at one slit or the other in

physical space. If we cannot make statements about particles during periods they are not being observed, then we cannot say that the particle was in a state of superposition prior to arriving at the screen. Additionally, if the photon did not exist in physical space before we detected it at the slit, then the light source had not yet emitted a photon in physical space. Therefore the light source was turned off, no light had been emitted, and there would be no photon probability wave functions to collapse, even though interference was being observed at the detector panel. The logic of this way of talking contradicts itself, which proves there is something wrong with it.

Further, it makes no sense to say that the probability of the photon arriving at slit one or slit two remains 50:50 right up till the moment the photon arrives at slit one or two. Surely, the probability wave function must collapse continuously from 50:50 at emission to 100:0 as the photon reaches the screen. It makes no geometrical sense to say that a photon could physically jump instantaneously from its position very close to slit two to entering slit one,

depending on whether we set our detector at slit one or slit two. The probability wave function can collapse instantaneously, but that is a mathematical process, not an event in physical space.

Quantum mechanics has not yet figured out a way to predict the path of an individual photon in physical space. The Copenhagen interpretation solves this problem by stating that the photon does not exist in physical space until the act of observation collapses the wave function, causing it to materialize in a particular position. But that defies common sense. I think I have devised a way to test the quantum enigma experimentally (see below), but I could well be wrong.

Logical Problems Concerning The Photon Detector Array

What if we had an infinite array of particle detectors between the light source and the screen? Surely these would track a photon traversing a path towards one slit or the other. Say we measured the photon repeatedly at small intervals,

alternately from the left and the right so that the overall net deflection caused by our observations was zero. Then we would see that the photon had a 50:50 probability of going to slit one or two at the instant its leading edge emerged from the light source. But this probability would gradually shift to 100:0.

Would it be possible, technically, to conduct the two-slit experiment in a cloud chamber? If so, what would we see when the light source was dim? Would we not see particle paths going through one slit or the other, and an interference pattern on the detector panel? Indeed, if particles don't travel defined paths in physical space, then how could cloud chambers work? Or do cloud chambers deal only with collapsed wave functions?

Returning to the two-slit experiment, if we have no detectors set between the source and the screen, then all we have is a 50:50 probability until a photon actually shows up at slit one or two. That is easy to understand. But what if we have no detectors set at the slits, or for an inch after the slits? Then we still have only a probability wave

function, even though the photon has just passed through one slit or the other. Why do we assume that interference must occur at the slits? Why are the slits any more relevant to the location of the collapse of the wave function than any other location between the light source and the detector panel? We know that no interference occurs for at least one inch past the screen, even with a bright light source.

We also know that when both slits are open, light arrives in the dark areas but interferes destructively with itself. This must be true in both the wave and the particle conditions. Inversely, when slit two is closed, we aren't surprised when the wave going through slit one creates no interference pattern on the detector panel. We don't conclude that the wave "knows" that slit two is closed while it is passing through slit one. It just goes on its way through slit one and encounters no out-of-phase wave at the detector panel.

Why does a photon at slit one have to "know" the condition of slit two any more than the wave does? If we set a particle detector at slit two and leave

slit one open, the interference pattern disappears; a variation of the quantum enigma then becomes, how does the photon going through slit one know that the photon going through slit two has been detected? It seems that detecting the photon at slit two is indistinguishable from closing slit two, which seems logical; the photon is absorbed by the detector and ends its journey there. The photon going through slit one doesn't have to "know" this or make any decisions about interference until it arrives at the detector panel.

It seems to me most logical to say that if the probability wave function collapses anywhere, in the standard two-slit experiment as performed by Thomas Young, it must be at the detector panel. I don't see why we talk about collapse at the slits at all. It seems unwarranted to state that there are no photons on the near side of the screen, while photons exist on the far side due to collapse at the slits. In the wave condition, in fact, there are no photons to talk about anywhere. It seems that the quantum enigma could be solved by an injunction to stop talking about photons at all, during periods that no observation is being made, and it seems

that this injunction is required by the Copenhagen Interpretation.

If we really can't say anything about the state of the photon between observations, then why are we allowed to say that it exists in a superposition state? Why is this description allowed if no descriptions are allowed? If we can't know the state of the photon prior to our collapsing its wave function by observation, then, strictly speaking, how can we say that there has been a collapse at all? The quantum enigma seems to arise from mixing mathematical space and physical space and imagining that something collapses in physical space.

Also, if slit two is closed, then the probability of a photon passing through slit two is zero at the moment it emerges from the light source. Over time, half the photons will hit the closed slit two and half will pass through the open slit one (considering only those photons that arrive at one or the other slit – most photons never make it through either slit because they hit the solid screen). This seems entirely non-mysterious.

Electrical Engineering Questions About The Two-Slit Experiment

It appears to me that interference occurs only at the detector panel. No interference can be observed in the space between the screen and the panel because there is nothing to detect it with. Therefore, consistent with the Copenhagen interpretation, we can speak only about probabilities until light actually hits the panel. If interference occurs only at the detector panel – certainly no one claims that wave interference occurs at the slits – then I assume this must also be true for photons. Either they don't interfere at all, with themselves or with other photons, or they interfere but only at the panel because prior to the panel no interference takes place.

This makes me ask questions about the electrical engineering aspects of photon interference on the panel. If the photons never arrived at the panel, or if they all passed through it, no interference would occur. Also, it is definitely dark on the far side of the panel. Therefore, all the photons are being absorbed by the panel. Since I can see bands of

light and bands of dark on the panel, however, I know that the photons arriving in the dark bands are being absorbed but not re-emitted. Those arriving in the bright band areas are being absorbed and also re-emitted.

This makes me ask questions about the electrical engineering events that occur in the panel. How long does it take for a photon to be absorbed by the panel? How widely distributed in the panel is a single absorption event? How long can a photon from a dim light source wait at the panel for the arrival of the next photon in its absorption region? In other words, is there a threshold of dimness below which interference never occurs, no matter how long the light source is kept on?

It seems incorrect to say that no photons are arriving in the dark bands on the panel, despite the fact that the photon detector never goes off. It seems more logical to say that in the bright light source condition, photons destructively interfere with each other during the process of absorption into the electron field of the detector panel, and

prior to the electrical engineering event required to trigger the photon detector.

Surely, if the light source is dim enough, an absorbed photon is dissipated prior to the arrival of the next photon, and all traces of its arrival at the screen are gone, so the next photon cannot interfere with the previous one. From this it follows that the phase of an arriving wave packet must be stored in the screen for a finite period of time in order for either constructive or destructive interference to occur. Maybe the photon arrives as a particle, but becomes more widely distributed upon absorption. Maybe one could say that it arrives as a probability function, collapses into a particle in a restricted space during absorption, but then de-collapses into a more widely distributed state over a short period of time.

It seems that the interference of individual photons with each other at the screen could be demonstrated by a three-stage experiment:

Table Appendix. 5. A Proposed Two-Slit Experiment With Photons

1. The standard two-slit experiment with a bright light source Interference occurs – no photons detected in the dark bands
2. Dim the light source sufficiently so that only one photon at a time goes through the screen Interference still occurs – no photons detected in the dark bands
3. Dim the light source further until interference disappears – photons detected in the areas that were previously dark bands

The time interval between departures of photons from the light source at transition from outcome (2) to outcome (3) would equal the time that photons can be retained in the detector in a state that allows interference to occur.

If the third stage of the experiment worked out as predicted, it seems that the quantum enigma would evaporate. A photon would not have to know if the other slit was closed, would not have to be in two places at the same time, and would not have to interfere with itself. The philosophical implications of the two-slit experiment would then be the same as the implications of shining a flashlight in the

basement. The entanglement of the consciousness of the observer with the two-slit experiment would be neither more nor less mysterious than the entanglement of the consciousness of a flashlight holder with the scampering away of an illuminated mouse in a basement, which would not have occurred if the home owner had not decided to enter the basement and shine the flashlight in the direction of the mouse (see discussion of entanglement below).

The Heisenberg Uncertainty Principle

According to the Heisenberg Uncertainty Principle, it is not possible to measure both the position and the momentum of a particle simultaneously with perfect accuracy. If one knows the position exactly, the momentum is unknown, and vice versa. This is not simply a technical problem with making measurements, according to quantum mechanics, but an intrinsic quality of the physical universe. It is physically impossible to know position and momentum precisely at the same time, no matter how good our measurement apparatus. The Heisenberg Uncertainty Principle is often cited as

providing further evidence of an interaction between consciousness and matter, on the grounds that deciding to observe the position of a particle precisely causes the momentum to be uncertain in external reality, and vice versa.

Drawing philosophical conclusions about free will or consciousness from the Uncertainty Principle is possible only if one ignores the size of Planck's constant. For any particle, the product of the uncertainty in its position and the uncertainty in its momentum is always equal to Planck's constant, according to the Uncertainty Principle. However, Planck's constant is an incredibly small number - 6.55×10^{-27} erg seconds. Such an infinitesimal degree of uncertainty is far, far below the threshold of human consciousness. Claiming that the Heisenberg Uncertainty Principle has anything to do with the operation of human consciousness is like claiming that an allergic reaction on earth was caused by molecules on Pluto.

Although the precise position and momentum of the photon cannot be known simultaneously, due to Heisenberg's Uncertainty Principle, in the two-

slit experiment we are concerned only with its position, so uncertainty in the momentum is not a problem. For this reason alone, the Heisenberg Uncertainty Principle is not relevant to philosophical interpretations of the two-slit experiment.

The Concept of Entanglement

The quantum mechanical concept of entanglement is used by various authors, along with the Heisenberg Uncertainty Principle and the two-slit experiment, to support theological and philosophical arguments. Although the photon detector is not itself regarded as a conscious observer by these authors, a sequence of interactions occurs between the photon, the photon detector, and the sound of the detector click in the physicist's mind. The conscious perception by the physicist is an inseparable component of the experimental apparatus. Indeed, the physicist's decision to set the photon detector at slit one forced the probability wave function to collapse at slit one, which is an interaction of consciousness with matter. This linkage of consciousness to the

rest of the experimental apparatus is called entanglement, and entanglement is therefore cited as evidence for the interaction of consciousness with matter.

This is how some commentators conclude that quantum mechanics supports the existence of free will and an interaction between consciousness and matter. A physicist decides to close slit two: this decision causes a photon going through slit one to "know" that slit two is closed and this in turn causes the photon to "decide" not to create interference. Similarly, if the physicist decides to set a photon detector at slit one, this decision causes the probability wave function of the photon to collapse at slit one: the physicist's mind causes the photon to transform from a probability function in mathematical space to a particle in physical space that can be detected by a detector at slit one.

Additional experiments of this type became more convoluted and difficult to understand in the late twentieth century, but the same basic logic applies to them. From my perspective, spirit is a general

property of matter, therefore consciousness is interacting with matter, energy, space and time all the time, and everywhere. No specific experiment can demonstrate this interaction unless it measures consciousness directly. In earlier chapters I described experiments that could detect the self-organizing property of consciousness, and the interaction of the mind with the brain. These experiments do not involve human consciousness positioned off to the side of the experimental apparatus and the primary measurements in the experiment, as it is in the two-slit experiment.

Schrodinger's Cat

Many popular explanations of quantum mechanics tell the tale of Schrodinger's cat. It illustrates the principle of the collapse of the probability wave function but at a macroscopic or Newtonian level. An unfortunate cat is placed inside an opaque box with a sample of radioactive material, a Geiger counter, a vial of poisonous gas, and a mechanism connecting the Geiger counter to a hammer. When tripped, the hammer breaks the vial and the gas kills the cat.

The cat is left in the box unobserved for a set period of time that, given the half-life of the radioactive material, leads to a 50:50 probability that a particle will be emitted, the hammer tripped and the cat killed. The observer does not know if the cat is alive or dead until he opens the box. If the experiment is done on a million cats, the number found to be dead will not differ significantly from 500,000. This is actually true experimentally.

According to the logic of the quantum enigma, however, the wave function of each individual cat does not collapse until the observer opens the box. Until that moment, there is a 50:50 chance that the cat is alive or dead. It is in a superstition state and is both alive and dead. Once the box is opened, though, the wave function collapses, and the cat is either 100% alive or 100% dead. Until the observer looks, however, the cat is both alive and dead and neither alive nor dead. There is an equal but unrealized potential for its being alive or dead. The act of the observer taking a look (not the poisonous gas) either kills or saves the cat.

The point of this thought experiment, one would think, is to prove that there is an error in the logic, or at least to prove that the quantum enigma – the measurement problem – cannot apply to the macroscopic world. That is how Schrodinger intended it. The fact that we can only deal with probabilities experimentally in quantum mechanics, does not mean that the act of opening the box and looking either kills or saves an individual cat. Therefore, the quantum enigma, I argue, tells us nothing about the nature of consciousness or its interactions with matter at a macroscopic level.

It would be simple to prove that every cat, out of the one million tested, was either alive or dead immediately prior to its box being opened, that no cats were ever in a superposition state, and that the cause of all deaths was the breaking of the vial not the opening of the box. All you would have to do is place a video camera in each box. The video camera would never trip the hammer and neither would the human observer or the act of opening the box. The video camera would carry out the same function carried out by the cloud chamber if

the two-slit experiment was carried out in a cloud chamber.

The Einstein-Podolsky-Rosen (EPR) Experiment

Einstein and Bohr debated the Copenhagen interpretation for years, and they continued to disagree about it until Einstein's death. Einstein never accepted the Copenhagen interpretation or the physical reality of the quantum enigma.

The debate between Einstein and Bohr involved a refinement of the two-slit experiment in the form of a thought experiment created by Einstein and two colleagues – the Einstein-Podolsky-Rosen Paradox. Einstein called the phenomenon Bohr accepted as real – how a photon at an open slit knows whether the other slit is open or closed – "spooky action at a distance" and rejected it: he thought there must be some other set of laws, rules or mechanisms, called hidden variables in physics, to explain what was going on.

As explained by Rosenblum and Kuttner (2006), a version of the EPR experiment illustrates the quantum enigma plus what Einstein called “spooky action at a distance,” which Einstein rejected as impossible. The experiment involves sending synchronized pairs of photons – “twin photons” – off in opposite directions over a great distance. Conceptually, they can be synchronized for any variable, and any type of particle can be used, but in this example the particles are photons with identical polarization.

Let’s say both photons have vertical polarization at their point of origin. At a remote distance, each photon is fed into a device that has two channels: channel 1 allows photons polarized vertically to pass to detector 1, while channel 2 allows horizontally polarized photons to pass to detector 2.

A crucial characteristic of the experimental set-up is the fact that the two devices are so far apart that the polarization of each photon can be measured more quickly than light can travel from one detector to another. What is observed, in actual

experiments that test the EPR Paradox, such as one conducted by Alain Aspect? When one photon of a pair arrives at its detector 1 with polarization 1, the twin always arrives at its detector 1 with polarization 1. There is never a mismatch. Similarly if a pair of twin photons is polarized horizontally, then when one arrives at detector 2, the other always arrives at detector 2.

The enigma, supposedly, is, how does one photon know the state of the other, in order that the two can match up, when there is no time for a signal to communicate this information? The experiment supposedly demonstrates the transmission of information faster than the speed of light without a physical signal.

The results of experiments by Alain Aspect and others are said to have proven what is called non-local causality. Einstein called this “spooky action at a distance.” Forcing the first twin photon into condition 1, forces the other twin photon into condition 1, faster than information could be transmitted between them at the speed of light. A more complicated experimental design that tests a

theory called Bell's Inequality, also demonstrates this non-local causality. Some commentators argue that these experiments provide evidence for consciousness, free will, God, mental telepathy, and other things. To me, the experiments are simply incomprehensible.

Such experimental results seem to be incomprehensible for physicists too. For instance, in order to explain non-local causality, some physicists have postulated the existence of tachyons that travel faster than the speed of light, and move backwards in time. By traveling backwards in time, the tachyons carry the information from the first photon detector to the second so that the instruction about how to collapse the wave function of the second photon into condition 1 or condition 2 seems to be transmitted instantaneously. Without tachyons, or some other hidden variable, the observed results seem impossible, even though they do take place. The problem is not the results, though, it is creating logic structures to accommodate them.

From my perspective, however, there does not seem to be any enigma at all. The popular explanation of why an enigma exists is incomprehensible to me. The photons are by definition twin photons with the same polarization at their point of origin. Why is it surprising that they still have the same polarization when they arrive at the remote detector? The “enigma” seems to arise because the polarization of the photons was unknown at their point of origin, therefore they are regarded as being in a state of superposition with an indeterminate state of polarization until they are observed by the detector far away from their point of origin.

Observing the polarization of the first photon in the twin pair, according to the quantum enigma, causes the probability wave function of the second photon to collapse into the same polarization state. This occurs instantaneously, or at least faster than information could travel from the first photon to the second to “instruct” it as to which polarization state to “choose.” This is proven experimentally by measuring the polarization state of each photon in less time than it would take for information to

travel from one detector to the other at the speed of light – hence the “spooky action at a distance.”

From my perspective, this is completely unremarkable because the photons are twin photons. The experiment is set up so that they have the same polarization. A great deal of technical effort is expended to ensure that the photons are “twins” at their point of origin. If the photons were not twins at their point of origin, their polarization states would match only 50% of the time at the remote detectors (assuming that all photons were polarized in either the vertical or the horizontal plane). The experimenters do not know which polarization state a given pair is in at the beginning of the experiment, but he does know that they are in the same polarization state because he has designed the apparatus to ensure that this is the case.

The experiment is like having a collection of identical twins standing on a median of a large road. Half the sets are male and half are female. When a physicist on one side of the road flashes a light, one set of twins walks to the side of the road,

one going in each direction. When a twin arrives on one side of the road, a physicist there clicks his stopwatch and records the gender of the twin. We have to imagine that the physicists can't observe the gender of the twins until they arrive at the side of the road.

The first physicist then instructs a courier to walk across the road with a message telling the second physicist the gender of the first twin. Before the courier arrives, the second physicist has already recorded the gender of his twin and clicked his stopwatch at the moment of his twin's arrival. Why is it surprising if the probability wave function of the second twin being male or female (which is 50:50 for each physicist till a twin actually arrives at his side of the road) collapses into male on one side of the road, when his co-twin on the other side is male, or female if the first twin was female?

I just don't get it. The photons are defined a priori and experimentally as being twins. Why are they said to be in a state of superposition physically? It is obvious that the probability of male or female is 50:50 from the physicists' perspectives while the

twins are unobserved and in transit from the median to the side of the road. But this doesn't mean that their polarization state (or gender) is indeterminate in physical reality, nor does it mean that observing their polarization (or gender) causes them to have that gender. Nor is that information transmitted to the other side of the road causing the second twin to become male or female through spooky action at a distance.

The quantum enigma seems to be an artifact of mixing mathematical and physical reality with each other, which I am not prone to do because I can't do the mathematics. People explain the quantum enigma and then say that the act of observation or detection causes the second photon to choose one of two states into which it then collapses – this, they say, demonstrates an interaction between consciousness and matter, or the observer and the experimental system, hence the quantum enigma.

It seems to me that common sense causes the enigma to vanish, which was Shrodinger's point

when he set up his thought experiment with his cat.

A Caution For Commentators On the Philosophical Implications of Quantum Mechanics

I think that commentators should be exceedingly cautious about using quantum mechanics to prove an interaction between consciousness and matter, the existence of consciousness or free will, or anything else of a philosophical nature. My analysis of the two-slit experiment may be naïve and mistaken. However, unless a commentator can refute it, in detail and convincingly, then, I would say, caution is required in using quantum mechanics to support philosophical propositions.

I am not trying to prove that quantum mechanics is "wrong" – my goal is to set up a requirement, rule or condition: before quantum mechanics can be used to provide evidence or arguments for free will, the interaction of consciousness with matter, or similar things, my analysis of the two-slit experiment must be refuted.

The science of human energy fields does not require any philosophical interpretations of quantum mechanics. Nor does it require my analysis of the two-slit experiment to be correct. The science is based on a philosophy of unity, and the proposition that spirit is a general property of matter. The purpose of my philosophical arguments is to permit certain crucial experiments to be undertaken, such as detection of the human eyebeam. Beyond that, the science is empirical in nature, although, like quantum mechanics, it has philosophical implications. The science of human energy fields either works or doesn't work empirically, independently of its philosophical implications.